From Pakistan to Portugal

Our Customers

Pasta drying

Aspiring to new heights of perfection

Food Security

How it is inspiring new alliances
FOCUS

5 Food Security
It might be the single greatest challenge in the world today: securing sufficient, safe and nutritious food for the world’s growing population. Research and industry are joining efforts with ETH’s World Food System Competence Centre. Can Bühler’s expertise contribute to solving the current dilemma?

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If one of the most popular foods takes a lot of fuel to prepare, creating an “instant” version of it will result in a substantial drop in energy consumption. Bühler explores whether “instant” might be the way forward.

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Dear Reader

Even before opening the first issue of diagram in 2012, you will have noticed that the appearance of our magazine has changed. Though the layout and design have been touched up, rest assured that diagram will continue to provide facts about Bühler’s products and services in an enjoyable and agreeable format.

One substantial change is that from now on, each issue of diagram will feature a thematic focus with in-depth information on a specific subject matter that could be of great importance to you as our customers and partners. We believe this is the best way to combine coverage of our day-to-day work with background information related to Bühler’s long-term vision and its established expertise in these areas.

For this issue, the overarching topic is Food Security. In a world where many people lack safe food, healthy food, or indeed any food at all, this is a question of existential importance for humankind. It is also one where Bühler can make a difference: Read the background article on Food Security (page 4), a comment by the director of the ICRC (page 6), and the report on a roundtable with experts from ETH Zurich’s newly established World Food System Competence Centre, to which Bühler contributes substantially (page 8).

And of course you will find a range of customer cases and reports from around the world; for this issue of diagram, we visited Bühler clients in Portugal, Egypt, and Pakistan.

We are looking forward to your comments and suggestions, and wish you an enjoyable read!

Calvin Grieder, CEO
2011 review shows Bühler on track

The Bühler Technology Group’s performance in 2011 once more showed a healthy development, with incoming orders exceeding CHF 2,233 million – an increase of 3 percent over the past year – and an even more impressive 12 percent growth of sales for a total of CHF 2,131 million. In Europe, about half of the achieved growth was due to the acquisition of German grain management specialist Schmidt-Seeger.

All divisions were drivers of this successful trend: The Advanced Materials division increased its turnover by 28 percent, largely due to a good year in the global automotive industry and exceptional performance of the Die Casting business unit. The Grain Processing division increased its turnover by 8 percent in 2011. In both areas, the increase was mainly achieved in the Asian markets, though similarly positive trends were seen in the European and South American trade. The Food Processing division maintained its level of new orders while securing an additional 10 percent turnover.

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Ruth Metzler new member of the Bühler board

In December 2011, Ruth Metzler-Arnold was elected as a new member of the board of directors of Bühler. Ms. Metzler-Arnold, a former Swiss Federal Councilor and Minister of Justice who is an acknowledged attorney at law and auditor, will strengthen the board with her expertise. Before joining the Swiss government, she was a member of the government and finance director of the Canton of Appenzell I.Rh., and before that worked during eight years with PricewaterhouseCoopers as an auditor and consultant. After her time in the Swiss government, she first headed the legal department of Novartis France during five years, where she was also a member of the executive management. She then assumed overall responsibility for investor relations at this Basel-based pharmaceutical group.

Today, Ruth Metzler has her own consultancy.

Kirin Brewery appreciates Bühler’s help in quake recovery

Kirin Beer is one of Japan’s best-known beer brands. On March 11, 2011, its breweries in Sendai and Tohira were struck by the devastating earthquake and subsequent tsunami that caused huge damage and loss of lives in the Tohoku region. At both plants, facilities and stock were severely damaged. Since Bühler had supplied six malt mills to Kirin, a team of Bühler engineers went to Sendai to offer free expertise to the repair work. In September 2011, after months of repairs and cleaning work assisted by business partners and subcontractors, the first batch of beer since the quake was delivered. The construction effort will continue for some time before full operations resume. Kirin expressed its thanks to the partners that supported the restoration work, including Bühler. Kirin Brewery Co., Ltd. was established in 1907, and opened its Sendai plant in 1923. The factory covers an area of 320,000 square meters and provides work for more than 200 employees.
At the end of December, the Arabic pasta producer Salalah Macaroni Co. S.A.O.C. was awarded the “Majesty’s Cup for Best Factories 2011” by the Sultan Qaboos ibn Said in Muscat, the capital of the Sultanate of Oman. The Majesty’s Cup has been awarded annually since 1991 in five categories. It goes to the best companies which with their high-quality products and successes in local, regional, and international markets have distinguished themselves by their efforts to achieve the economic targets defined by the government of the sultanate. Salalah Macaroni Co. was set up in 2007. In its factory in Salalah in the south of the country, it operates one Bühler Short Goods Pasta line with a capacity of 3,000 kg/h with the newest Polymatik Press Technology combined with the C-Line Turbothermatik dryer of latest generation. This makes Salalah Macaroni Co. S.A.O.C. the most modern pasta producer in Oman.

Bakery Innovation Center – focusing on customers’ customers

In addition to individual product and process solutions, the new Bakery Innovation Center (BIC) of Bühler in Uzwil offers training courses and thus supplements the Milling courses of Bühler with bakery-specific subjects. In response to brisk demand, new courses are now being added. It has been found that grain millers and bakers have a great need for in-depth know-how on the functionalities of flour and its applications. The course experts look in detail into the intricacies of bread production. They impart sound knowledge of flour production and qualities as well as flour optimization for specific applications such as baguettes, cookies (biscuits), pizza, etc. Other subjects include raw material quality assessment, flour analysis, and flour correction. The products are evaluated and methodically assessed in standardized baking tests. Another block of subjects on trends and their influence on future grain processing unlock new business opportunities for participants in their respective markets.

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Oman: Sultan distinguishes a Bühler customer

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The four areas of focus

**Availability**
- The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or inputs.
- Producing and processing affordable, nutritious, and safe food sustainably with an efficient use of technology, investments and increasingly scarce natural resources (such as land, soil, water, fossil fertilizer and energy) while minimizing negative impacts on the environment.

**Access**
- Supplying food for a growing global population with rapidly changing behavior and consumption patterns as well as growing intercontinental disequilibrium between physical, economic food demand and potential food supply.
- Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet.

**Use**
- Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs to food security.

**Stability**
- Providing stable food supplies under changing environmental conditions (such as climate change) and changing socio-economic conditions (in terms of governance and global markets). Food security must be reliable despite environmental, financial and social risks and shocks affecting food production and distribution from regional to global levels.
The challenge of ensuring food security for a steadily expanding global population requires a joint effort involving academia, industry, and policy-makers. Bühler is a founding member of the Partnership Council of the World Food System Competence Centre at the Swiss Federal Institute of Technology (ETH Zurich), shaping the debate and seeking answers on food security.

By Haig Simonian

**At 7 billion and counting**, the world’s population is growing inexorably. Inevitably, with land and water resources finite, food security has jumped up the global agenda. Food security, to be clear, is not just the narrow matter of preventing contamination and meeting health and safety standards. While avoiding waste forms part of the bigger picture, the real issue is to ensure the ability of our planet to feed itself. In developed countries, it is estimated about one third of all food purchased is wasted. Banana traders traditionally joke their best customer is the household dustbin, because so much of what is bought ends up thrown away. Waste is also an issue in the developing world. Careless processing of crops or fruits at an early stage, poor storage, and other factors can lead to large proportions of an annual harvest being discarded long before it reaches its destination.

But the central theme to food security is adequacy of supply. In recent years, advances in botany and genetics have prompted almost unimaginable improvements in plant productivity, as well as major progress in resistance to pests and disease. Better understanding of climate and soil has also helped to boost harvests, as has improved access to fertilizers and pesticides for many of the world’s poorest farmers. But food security remains central, in spite of all such steps. The challenge cannot be resolved by one group alone: plant scientists in the lab can improve resistance and improve yields, but cannot provide the farm machinery that helps poorer farmers grow more. Multinational food and
crop science companies can invest in better processing technology – some even endeavor to boost conditions on the ground in poorer regions through admirable corporate citizenship schemes. But they cannot build the roads required to get products to market more quickly. Even when politicians or governments become involved, their focus on national farm subsidies or incentives is often too narrow to change the global picture.

**A wealth of expertise**

So food security can only be addressed adequately via a collaborative, multidisciplinary process between key groups. It is against this background that Bühler has become a founding partner of a ground-breaking scheme – the World Food System Competence Centre at the Swiss Federal Institute of Technology (ETH Zurich). This is where Bühler, a world leader in food processing solutions, hopes real progress can be made in shaping the debate about food security and, hopefully, finding at least some of the answers required. “ETH Zurich is host to a wealth of scientific expertise stretching across the entire food supply chain from agricultural inputs and production methods to food processing, consumer behavior, and human nutrition and health,”

**How can access to food be improved?**

High-yield seeds, fertilizers, and small-scale irrigation have boosted food productivity since the 1960s. However, this Green Revolution has not taken root in Africa, where basic infrastructure is often lacking and hunger is increased by conflicts, declining aid, water shortage, or demographics. Climate change will further hurt food production in developing nations, where up to 30 percent of yields are lost after harvest due to inadequate storage, preservation, and distribution and lack of capital investment. Production and aid must catch up with population increase or migration pressures will worsen. Cash aid is better than food aid, since goods and services can be purchased, creating employment and income. Speculators must be denied excessive market power over food through regulation. Yields on small farms are often higher than on more capital-intensive enterprises, so support for smallholder farming is important.

**How can the corporate sector help?**

Businesses are embracing new ways to address food insecurity. For instance, Bangladeshi microfinance institution Grameen Bank and the French Group Danone formed Grameen Danone Foods in 2006 and developed fortified yoghurt costing much less than comparable products.

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**Food insecurity and the Red Cross & Red Crescent**

IFRC President Tadateru Konoé rallies against global hunger.

The International Federation of Red Cross and Red Crescent Societies (IFRC) and its 187 member Red Cross and Red Crescent National Societies serve vulnerable communities affected by health emergencies and natural disasters that contribute to the problem of food insecurity. IFRC President Tadateru Konoé spoke to Diagramm.

**What role does food security play for the IFRC?**

Nearly one billion people around the world go to bed hungry every night. Faced with disasters and sharply rising food prices, without adequate nutrition, vulnerable communities cannot sustain themselves or prepare for natural disasters. The IFRC has developed seed banks and small-scale irrigation schemes to improve access to food before and after disasters. But until governments, donors, humanitarian agencies, and civil society coordinate their responses and increase funding, food security will remain a problem.

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“I believe there is no other program like the World Food System Competence Centre. I am proud we are here from the outset.”

Ian Roberts

says Michelle Grant, Executive Director of the new center. “With the establishment of the center, there is now a platform for this expertise to be brought together in a way that supports interdisciplinary and system-based approaches to addressing the global challenges,” she adds.

The ambition is bold. To help map out a path to sustainable global food security, the center has identified four areas of focus: improving the availability of food of appropriate quality; boosting access to that food for a rapidly growing population; using that food suitably; and ensuring supplies can be guaranteed amid changing conditions, whether they be environmental impacts of global warming or socio-economic transformations. “It is a very tall order. But I believe there is no other program like it. I am proud we are here from the outset,” says Ian Roberts, Bühler’s Chief Technology Officer and a key participant.

Longstanding ties

The Swiss industrial group’s association with ETH Zurich, Switzerland’s most prestigious seat of scientific and technical learning, is nothing new. As a household name in process engineering, Bühler has for years been an important destination for ETH graduates. Not surprisingly, the group’s current chief executive is also an ETH alumnus. Links have also long existed on the research front. The ETH, regularly ranked among the world’s leading universities, is an established source of expertise not just for Bühler, but for many Swiss companies with international names in machine tools, micro-mechanical engineering, and medical technology.

In Bühler’s case, the relationship has in recent years grown closer as the company and the ETH – or individual faculty members – have co-operated on specific projects, whether in engineering, agricultural science, or food science. “This has been part of Bühler’s own development over the past decade towards being much more knowledge-based about the materials we process, and more than just a highly competent engineering group,” says Roberts. The latest relationship breaks new ground for both sides. A guiding principle of the center is its multi-disciplinary nature – not just within the university itself, drawing on talents from many departments, but also in terms of involving well-placed outsiders.

As a leading name in food processing equipment, with contacts around the globe, Bühler is an obvious partner. But it is in the best company: Among other industrial groups closely involved are Nestlé, the world’s biggest foods group by sales, and Syngenta, the Basel-based company at the cutting edge of crop science and seed technology. The centre’s Partnership Council is open not only to industry members, but also foundations and philanthropic organizations, such as Switzerland’s Mercator Foundation, an early donor to a research, education, and outreach programme on the role of organic and low input agriculture.

“Something like two thirds of the world’s wheat goes through Bühler equipment. In one way or another, we’re behind two out of every three loaves of bread in the world – not to mention pasta and chocolate,” says Ian Roberts. “Given our position, we have a lot to give – and a lot to gain. We can contribute pragmatic, applied understanding, as well as real know-how from different regions, as we do business globally. In that way, we can add to the more academic inputs of ETH Zurich. But we recognize there’s also a gain. We want to show our customers we don’t just make machines, but grasp the bigger global issues at stake in our business.”

Haig Simonian is Switzerland correspondent of the Financial Times.
Eth’s Emmanuel Frossard, Ian Roberts, CTO Bühler, Haig Simonian, Financial Times and Michelle Grant, CEO of the World Food System Competence Centre at ETH (from left) share the commitment to food security.

“Food security is the top priority”

An expert roundtable at ETH Zurich

As a partner of the World Food System Competence Centre, Bühler organized a debate on ways to avoid food shortages and make human consumption patterns more sustainable in order to ensure global food security for all.

What do you see as the biggest challenges for world food?

Michelle Grant: “I’d say the question of how to feed the world, while at the same time bearing in mind human health, the environment, and social wellbeing, is really the defining and possibly the most complex challenge of our time.”

Ian Roberts: “Security is certainly the top priority. Catastrophes, like the famine currently gripping East Africa, mustn't be allowed to recur. We must also ensure the introduction of sustainable technologies in food production. In many regions, for example, water is a scarce resource, and one that should be consumed only with great care in...”
producing foods. Finally, customers in local markets around the world need to be persuaded to concentrate on producing the foods most appropriate to their local conditions.

**What can Bühler do to help?**

**IAN ROBERTS:** "As a global company, we understand local and international markets. We’re on the spot and know what’s taking place and where. That’s essential for the new program. Of course, one can recommend measures from Switzerland, but we really need a deep knowledge of markets in India, China, Brazil, or Africa to make it work."

**What does Bühler expect to gain?**

**IAN ROBERTS:** "We’re a leading global manufacturer of equipment for food processing and handling. More than 60 percent of the world’s grain runs through our machinery. And we’re also leaders in pasta and chocolate. But we recognize that gaining a better understanding of the entire value chain in food production could be a decisive competitive advantage for us. So participating in the World Food System program helps to underpin our future. That doesn’t just mean improving the technical characteristics of our mills and conches, or the production processes they facilitate. It means understanding the impact of demographics and environmental factors like climate change on food production. Working with ETH Zurich and other industrial partners is essential in that."

“Water is a scarce resource, and one that should be consumed with great care in producing food.”

Ian Roberts
Michelle Grant: ‘A crucial element of the World Food System Competence Centre is our Partnership Council, which brings together key players from academia, industry and philanthropy. The Council offers a platform for co-operating on defining challenges and developing and implementing solutions. It will also play an important role in ensuring research is disseminated to decision-makers, and keep our work fully in touch with the ‘real world’ and creating a collaborative network. Already, Syngenta and the Mercator Foundation Switzerland are on board along with Bühler, and other partners are in discussion.’

Ian Roberts: ‘There are obviously mutual benefits. The companies get to know each other better. Already, we can see people are becoming increasingly open as the program develops.’

How is the scheme structured?

Emmanuel Frossard: ‘Let’s start with the background. As early as 2006, the Agriculture and Food Sciences Department at ETH Zurich had been looking for a more inclusive way of examining food-related issues. We wanted to bring in not just scientific competence in terms of how food was grown and processed, but a much wider range of aspects, including environmental and economic factors. Due to internal changes at ETH Zurich, the former Department of Agriculture and Food Sciences was divided into two units as of 2012, one focusing on the science of environmental systems (the Department of Environmental Systems Science) and the other looking at health science and technology (the Department of Health Sciences and Technology). The idea behind the World Food System Competence Centre was to create a platform linking different academic units of the ETH and incorporating external partners and policy-makers.’

Ian Roberts: ‘Bühler had been working with ETH Zurich for years. What’s new now is that lots of different specialties will be housed under one roof. Networking and inter-linkage are the keywords. We believe that is essential for stimulating innovation – something that would be much harder within a single institute or faculty. Bringing academia and industry together, as envisaged in the World Food System project, is another boon. I think it’s particularly important to get the structure right from the start, to make sure it meets our full expectations. Because the targets we’ve set are very ambitious.”

Michelle Grant: ‘The key body is the Steering Committee, made up of ten elected members who are ETH professors. It absorbs input from the Partnership Council and from a Scientific Advisory Board comprising eight members from academia, industry, and the public sector. The Steering Committee, which is itself overseen by the ETH, in turn supervises the Centre’s executive director and staff.”

Admittedly it’s still early days, but what’s happened so far?

Michelle Grant: ‘We’re still in the establishment phase, but we already have clear ideas on how we’ll go forward in our key activity areas of research, education and outreach.”

Ian Roberts: ‘We’ve already identified two projects. The first will look at the value chain for grains, focusing on five key crops. We’ll examine how factors like demographics, economics, urbanization, and globalization will affect demand. Of course, the
work will be much more detailed, taking in factors such as the availability of land, climatic considerations, and the economics of supply. A technical committee has already been established, comprising representatives from Bühler, Nestlé, Syngenta, and Swissmill, along with ETH and Swiss government appointees. Among the questions we’ll ask are: which crops face the greatest pressures and what does that mean for land use? A second project has also been defined, although it’s still at an earlier phase. Here, we’ll examine the implications of the international shift towards a more meat-based diet for humans. We’ll look at potential alternative sources from plant protein and ask how these might be processed and structured to offer viable alternatives to meat.”

“Our research will be fully in touch with the ‘real world’ and disseminated to decision-makers.”

Michelle Grant
SAME TASTE, SHORTER COOKING TIME

“Instant Maize Meal” is a Bühler process innovation – a dried, ready-to-consume type of maize (corn) that has been specifically developed for southern Africa. Instead of requiring the usual cooking time of thirty minutes, it takes no longer than two to five minutes to prepare this dish which tastes exactly the same as the conventional product.

By David Signer

**Step one: Identify needs and conduct initial tests**

Maize (corn) is the most widely grown grain throughout the world: 800 million tons annually. Most of it is used as animal feed. But maize is a staple food for the populations living in vast areas of Africa. It is consumed up to three times a day – sometimes salty, occasionally sweetened, coming in the form of a porridge or kind of polenta and called ugali, mealie-meal, or mealie-pap, depending on the specific region. In these different forms, average local consumers eat 85 kilograms of maize a year.

Preparation requires much time and energy. The maize, processed on advanced milling plants into grits, must cook for at least half an hour. In less developed, rural areas, paraffin or wood is used for cooking. This not only requires lots of work and time, but also increasingly scarce and hard-to-gather firewood or expensive gas or electric power. Moreover, in the rapidly growing African cities, an increasing need is emerging for meals that are quick and easy to prepare (convenience food). This trend will spread in the years to come. It is expected that half the African population will live in urban
areas by 2025. Africa today is considered as an emerging market, and urbanization is associated with a general modernization of people’s lifestyles. Attempts have therefore been made for some time now to produce maize grits with a shorter cooking time – Instant Maize Meal. But the problem with these products so far has been that they either had a different taste than conventional grits, a color and consistency that was not the same, or – as maize grits are often eaten by hand in Africa – that they stuck to the fingers. But since consumers are fairly traditional as far as food is concerned, the new instant products were unable to gain acceptance in the marketplace.

Needless to say that this situation was also known to the local Bühler staff. This therefore provided an ideal field for applying the corporate philosophy of not taking existing technologies as a basis for rolling out innovations, but the specific needs of a local population. After Bühler had thoroughly tested possible versions of quick-cooking maize grits since 2000, the company started in 2008 with a more accurate analysis, compared the concrete requirements of African consumers with the technological possibilities, and started pilot-testing instant maize grits in Uzwil. Once initial promising results had been obtained, grain processing companies in the region were approached in order to consider working together.
Step two:
Tests with customers in Uzwil

From 2010 onward, Bühler conducted tests in Uzwil together with customers from southern Africa. The purpose was to adapt the existing process technology to achieve the desired end product properties. For example, a roller mill usually applied for making oat flakes was retrofitted to allow maize to be processed. In very extensive experiments, production was tested on a commercial scale. Not only individual samples of instant maize grits were produced, but tons of it – just like in real life. And it was found that the end product was indeed on a par with the conventional product in terms of appearance, taste, texture, and mouth feel.

One day, all the customers, engineers, and employees involved from Africa as well as Switzerland met in the company kitchen in Uzwil to prepare the new maize grits. The meeting was marked by real-life exchanges (“My wife usually takes a bit more water”, “As kids, we used to sprinkle a bit of sugar over it”). The moment of truth had also come for the technicians – the stride from flow charts and nuts and bolts to a culinary self-test.

Research revealed that it would easily be possible to produce instant maize grits which required a cooking time of less than two minutes. But for sanitary reasons, also the WHO recommended a cooking time of minimum two minutes. Instant maize grits obtains its ideal texture after precisely this time.

The new production process increases the shelf life of the product from a few months up to 10 or 12 months. In addition, vitamins and nutrients can be added to the grits. This is also done in conventional industrial-scale production processes. But in making instant maize grits, these additives which are so important for ensuring a balanced nutrition only have to withstand a cooking time of a few minutes. This reduces the associated costs for the producer and increases the effectiveness of the additives.

The test results were positive also from an ecological viewpoint: No waste water is produced and the volume of water to be discharged during drying is comparatively small.

Step three:
Installation in Africa

In mid-2011, after patenting, Instant Maize was released as a process innovation for the market. The technology is being fine-tuned on site – a prolonged process involving feedback and adjustments. This is because many factors which have an impact on the quality of the end product – temperature, moisture, raw material properties – can only be verified at the local production site. The first plants will go into service toward the end of 2012.

Bühler recently won the Gold Medal for the development of Instant Maize Meal in the context of the international FoodTec Award 2012 of the German Agricultural Society. This goes to show the great potential that exists in optimizing a staple food.

David Signer, ethnologist, is a freelance author who writes for the Swiss Sunday paper “NZZ am Sonntag”.

Adapting existing process technology:
A roller mill accustomed to shredding oats now processes maize.
A JEWEL – THE NEW MILL OF CEREALIS

Higher-quality flours, top sanitation and product safety, plus lower production costs – the new 720 t/24 h mill operated by Cerealis Moagens S.A. in Lisbon satisfies all the requirements of a state-of-the-art mill. With its new facility, Cerealis now owns Portugal’s largest mill and a true showcase plant.

By Herbert Bosshart
With its three large-scale flour mills in Lisbon, Porto, and Coimbra, Cerealis is Portugal’s largest grain miller. In 2007, the supervisory board of Cerealis decided to update the company’s entire flour and semolina production and to regroup these activities. The processing of durum wheat was to be merged in the two Cerealis pasta factories in Porto, whereas the processing of soft wheat was to be centered in Beato, in Lisbon. As an initial stage carried out in 2009, a new 370 t/24 h mill supplied by Bühler went into service for processing durum.

Guarantee for top quality
A short time later, the kick-off followed for implementing the second step, the construction of a 720 t/24 h flour mill in Beato. With it, Cerealis planned to further boost its competitiveness and increase its flour quality. The assignment for Bühler was defined as follows: to design and construct a cutting-edge mill equipped with the best plant components available and based on the latest insights in grain milling technology in the existing building structure which dated back to the fifties of the last century.

For Bühler, the Cerealis project was a great challenge. Project manager Pedro Willumsen: “Especially the target that the old cleaning section and the 500 t/24 h grinding system had to continue production unchanged up to the point of time of startup of the new mill was daunting. But also the age and the substance of the building gave us quite a few surprises.” Thus, building-related problems repeatedly
cropped up during construction which had to be carefully dealt with and thoroughly corrected. On the one hand, this led to delays, but on the other hand ultimately also provided the basis for a successful project. A great success factor was also the commitment of the Cerealis team. The industrial director Rui Azevedo, the technical responsible Patrick Boyle and Tiago Silva were outstanding in their dedication to the project.

The preliminary work lasted up to September 2010. During this time, the old building was structurally reinforced wherever needed and all utilities were installed. In addition, the large existing wheat storage elevator (silo) was extensively renewed and updated. In September 2010, installation work started. In June 2011, the new mill went into service and was officially opened one month later. Now the moment had come to decommission the old 500 t/24 h mill and to complete the finishing touches on the building structures.

**Customized flow chart**

The new 720 t/24 h mill operated by Cerealis is distinguished by a number of specific characteristics. For example, though it is equipped with receiving (intake) pits, they are rarely used. The grain is mostly transferred by chain conveyors to the cleaning section. For space reasons and in order to optimize the processes, its elements were arranged differently from the usual...
configuration by being distributed among the first and second cleaning stages. The equipment in the first cleaning stage consists solely of separators. Following the first dampening stage and intermediate storage in the tempering bins, the wheat is prepared for grinding in the second cleaning stage on combi-cleaners, scourers, and the newest optical color sorters of type SORTEX A5.

In the new mill, the Bühler “New Art of Milling” principle has been systematically and uncompromisingly put to practice. In the grinding system, the three Bühler stars Antares, Sirius, and Polaris ensure top flour quality. On the roller floor, a total of 27 Antares roller mills are in service – 8 eight-roller mills and 19 four-roller mills. Flour sifting and grading is performed on five sifters of type Sirius – four with ten compartments and one with four. All 44 sifter compartments are equipped with Novapur sieve frames and sieves. Four Polaris purifiers are applied for cleaning and grading the semolina.

Since its start-up, the new mill has been working to the full satisfaction of Cerealis. “The new mill has enabled us to yet again increase the quality of our flours. The new flours are excellently received by the market,” says CEO Rui Amorim de Sousa about the positive outcome of the project.

**Tailor-made control system**

The brain of the new mill is its tailor-made centralized WinCos control system. Touch panels are available on all building floors to verify the performance of a machine directly on site after maintenance or cleaning. Installation of these touch panels has allowed the electrical installation requirements to be reduced, as the need for manual service switches has been eliminated. Current faulty messages and the status of a machine at any given time can easily be read from the panel.

The production plant of Cerealis has been certified to ISO 22000. This prescribes traceability of the entire production process which is ensured by an appropriate tool. Finally, two important functions were added to the control system: The “Energy Management” and “KPI Plant Interruption Time Analysis” modules enable accurate control and monitoring of the energy used which minimizes energy consumption. And the “KPI Plant Interruption Time Analysis” module displays the plant downtimes along with notes on the plant component causing the trouble and the reasons. This reveals weak spots, ensures high production stability, and optimizes the availability of the production plant.

For more information on the Cerealis project, please contact

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Five Star Flour Mills is Egypt’s largest flour mill and the country’s leading producer of premium flour. Its four Bühler milling lines ensure constant high quality flours that meet customers’ demanding standards.

By Ward Pincus

**Mahmoud M. El Shorbagi**, chairman and managing director of Five Star Flour Mills, has a simple business strategy: to consistently provide the highest-quality flour to the most discerning customers in Egypt. He has pursued this strategy since he began construction on his first milling line in 1995, when the flour milling business in Egypt was opened to the private sector. Today, Five Star is the largest flour mill in this country of more than 80 million people that is the world’s largest importer of wheat. El Shorbagi has built this success, and his command over more than 80 percent of the premium flour sector in the country, on three factors: the best equipment, the best wheat, and continuous quality-control testing.
Nabil El Shorbagi, Mahmoud M. El Shorbagi’s son and the company’s general manager, notes that Five Star uses the products, plant design, and maintenance services of Bühler for “100 percent” of its grain storage, handling and milling equipment. This includes the plant’s grain storage silos, handling equipment, and four flour mill lines which together process nearly 2,000 tons of wheat per day, alongside a separate feed mill producing 1,500 tons of feed a day. It also includes a port grain handling facility at the nearby Suez Canal.

“One of the most important factors of our success is maintaining constant quality in the product. That’s what the baker wants. With Five Star, they know what they are getting, so they can use standard recipes. Even though we are a little bit more expensive, in Egypt we are still expanding. We also are targeting exports to neighboring African countries where there is a demand for high-quality flour,” Mohammed El Shorbagi says. “Bühler helps Five Star achieve this niche market for high-quality flour,” he adds, going on to describe the relationship between the two companies as one of mutual learning.

“We are always gaining from their experience and, likewise, we share our experiences with them; it benefits both sides. Bühler will always listen to us and is eager to do whatever is good for us, but always takes care on the quality side.”

A 35-year relationship with Bühler

The relationship between Bühler and Five Star has a history of more than 35 years, long before the company began operations. It began in the late 1970s when Mahmoud M. El Shorbagi was involved with flour- and feed milling in the Persian Gulf states of Bahrain and Oman. It was there that he first became familiar with Bühler’s milling equipment, and from this experience, he knew that Bühler was the best option for his first flour milling line in Egypt, particularly since he was looking to serve the country’s premium flour market. Five Star, in turn, has become one of Bühler’s largest clients and is serviced from the company’s head office in Uzwil, Switzerland.

Five Star’s fourth and most recent Bühler flour mill represents the latest in global flour milling technology. Its development, completed in May.
A Key Ingredient to the Company’s Success

Interview with Mohammed and Nabil El Shorbagi, Managers, Five Star Flour Mills

What was Five Star Flour Mills’ philosophy when it first launched in 1995?
When the flour milling industry was liberalized in Egypt, lots of other mills opened, but we had the philosophy that we would be the first to produce pure, white high-quality flour in Egypt, where in the past, the country only had dark flour. We had thought that it would be hard to serve only the high-quality flour market in Egypt, but to our surprise, it was only four or five months after building the first production line that we ordered our second line.

What is the company’s business strategy?
We only target customers and bakeries that produce high-quality bread and use high-quality flour. We have lots of experience producing this flour, starting with our production plant, which consists to 100 percent of equipment supplied by Bühler of Switzerland. We also are associated with very high-quality Australian wheat that gives a very white flour with very exceptional characteristics. We support these with a good quality-control department.

Why do your customers like Five Star flour?
One of the most important factors of our success is maintaining constant quality in the product. That’s what the baker wants. With Five Star, they know what they are getting, so they can use standard recipes. Even though we are a little bit more expensive, in Egypt we are still expanding. We are also targeting exports to neighboring African countries where there is a demand for high-quality flour.

How does Bühler equipment help Five Star and its clients?
It’s very important as a supplier to always be doing something new, always adding new value: this is what our customers have come to expect from Five Star. That’s why we keep expanding and investing in the latest technology. Of course, for us “latest technology” also means efficiency, more effectiveness in the working environment, and high levels of automation. Most customers make field visits to Five Star, and they are always very happy and confident about our products when they see such a new flour mill as for example this fourth milling line.

Optimizing an age-old process
Ever since the earliest wind- and water-driven millstones were constructed, the goal of flour milling has been to separate the greatest possible amount of endosperm from the bran, since it is the white endosperm starch that becomes white flour and semolina. The bran is either used as animal feed or mixed with milled white flour to make whole-wheat flour. Built according to the Bühler-designed flow sheet, the process at Five Star’s fourth and newest milling line commences with blending the various types of wheat, which is then cleaned and dampened. Then the milling process begins, which includes five separate breaking steps and ten reduction passages. The result is an industry-leading flour yield and specific flour property.

More specifically, after just the right wheat blend is achieved using Bühler’s differential proportioning scales, it is cleaned using a mix of aspiration, de-stoning, sifting, and optical sorting techniques. Then, following two consecutive dampening and drying cycles which give the wheat kernel’s exterior bran the greatest possible strength, milling begins. Within the mill, the wheat is ground, sifted, purified, and ground again – each time taking a little bit more of the endosperm from the bran. The finished flour is then mixed with various improvers before being bagged.

The plant features a well developed air make up system with air intake fans and filters to equalize air pressure and to ensure clean air within the factory;
**Five Star**

- **1995:** Deal signed between Bühler and Five Star for first milling line.
- **1997:** Plant commissioned and first commercial flour produced.
- **May 2011:** Fourth milling line begins production.
- Average daily production: **2,000 tons**
- Total average daily feed mill production: **1,500 tons**
- Five Star’s share of Egypt’s premium flour market: **80–85%**
- Main products:
  - Industrial-sized premium-quality flour, animal feed, retail-sized flour, specialty flour (e.g., for pizza, dumplings, and pancakes), and various cake mixes.
- Major clients:
  - GSF Foods (produces McDonald’s sandwich buns),
  - Rich Bake (produces Burger King sandwich buns),
  - Americana (Pizza Hut, KFC, and Hardees bread products),
  - Kraft Foods (biscuits and cakes).

This is particularly important given the often-dusty outdoor air conditions. Air is used not only to clean and purify the wheat and flour, but also to move it about the plant; therefore, used air is filtered and then vented from the facility. The WinCos plant control system provides safe, convenient, and precise operational oversight, with features such as information collection from the scales, and allows Five Star staff to make quick and efficient changes in the type of flour the line is producing, without having to make manual modifications throughout the plant. The control system also monitors equipment and sends a notification when maintenance on specific pieces of equipment is required, thereby maximizing the operating life of the system and its parts.

With such a strong partnership between Five Star and Bühler, and given the bright future for Five Star’s growth within Egypt and beyond, it seems certain that this 35-year-old relationship is set to last at least as long again.

**Ward Pincus** (Dubai) is a Middle East expert who writes on science, technology, health, and business issues for publications in North America, Europe, and the Middle East. He is a former correspondent for the Associated Press (AP) in the United Arab Emirates.
A PIONEERING PARTNERSHIP

In 1996, the first Bühler rice mill was exported to Pakistan, marking the start of a business partnership between Bühler and Garibsons (Pvt.) Ltd. that still continues today. The company’s Director Fuad Hamid Garib told diagram what matters most to him: Quality, competitiveness, and consistency.

By Eliane Engeler

Garibsons was the first company in Pakistan to buy a Bühler rice mill 15 years ago. You have continuously added Bühler equipment, with the latest being two new processing lines that can process ten tons per hour. Why did you buy the new lines?
The new processing lines were commissioned last summer. We bought them because we needed to expand our milling capacity. When we started rice milling in 1996, we pioneered the processing of long grain rice. Previously, only Basmati rice was being milled in Pakistan. All long grain rice was being exported as cheap quality 25% broken. We set up our first mill with the intention of converting this into good high-quality 5% silky broken in order to compete with Vietnamese and Thai suppliers. At the time, people laughed at us, but today, we have marketed Pakistani 5% well-milled rice into all the markets dominated by our competitors, and we are doing well. The acquisition of the two new lines is consistent with our strategy to convert a bigger share of the raw rice into rice, good-looking 5% silky polished rice.

Why have you been opting for Bühler ever since you started the rice business?
We started this business with our first Bühler mill in 1996, at a time when the rice milling industry in Pakistan was just beginning to grow. Most of the suppliers were using locally produced mills, but we wanted to go for the best equipment. For the commissioning of the plant, Bühler sent a rice technologist from its Thailand office, Dr. Ye Aung, who was instrumental in hooking us up with the supplier. During commissioning, there was a problem with one of the machines, and Dr. Ye Aung had it replaced quickly. They flew in a new machine and custom-cleared it. That’s where we saw the dedication of
Rice milling in Pakistan with the best equipment.
Bühler. Another reason for buying Bühler mills was that we got a very good deal as far as complete engineering and supplying equipment, including warranties, is concerned. The new lines have been running at full capacity since last year. We are negotiating another two lines with Bühler, which will hopefully be commissioned by September 2012.

The performance of Bühler machines has been very important. With a Bühler mill, we achieve quality in a competitive manner, and the plant runs consistently. The after-sales service is also good, in particular for the Sortex machines.

**Longstanding partnership**

- Garibsons bought Bühler rice mills in 1996 (Pakistan’s first), then in 1999, and 2003
- Complete Bühler rice mill commissioned summer 2011
- Multi-purpose processing lines; capacity: 10 tons/hour each
- Additional Bühler equipment includes polishers and 12 Sortex Z machines
- Overall rice milling capacity: 100 tons/hour

What is your strategy in the rice export business, and how has Bühler contributed to achieving your targets?

We are planning to go into retail packaging, in addition to the 50 kg and 25 kg bags we export. We are currently in discussion with Bühler for smaller packaging machines. Having Bühler equipment has helped us to receive BRC certification and to meet all the other international food safety standards required for supplying to retail supermarkets. The
Garibsons

- Family-owned; Pakistan’s largest rice processing company, 250 employees
- Handles 10% of Pakistan’s rice crops, sells own “Mughal” brand
- Annual sales: 500,000 tons of grains, flour, and oilseeds
- Annual turnover: 200 million US dollars
- www.garibsons.com

quality of the mill, the fact that it takes care of all aspects of processing and production and that Bühler is a well-known name, has helped enormously. In addition to retail packaging, we want to keep adding value to our rice. Pakistan’s crop varies between 5 million and 6.5 million tons every year. Domestic consumption is about 2 million tons, because rice is not our staple food. We always have 3.5 million to 4.5 million tons available for exports. Of these, about 1.5 million tons are still exported as unprocessed raw white rice and raw parboiled rice. We want to continue converting the raw rice into nice, good-looking 5% silky polished rice. This will allow us to keep penetrating the markets that were at one time dominated by Thailand, Vietnam, Uruguay, and the USA.

How do you think Bühler could improve its performance in Pakistan?
It might be advisable to maintain some stocks of the wear-and-tear parts as well as some spare machines in case consumers have a problem. If I have a problem, for example with one of my polishers, Bühler sends the manpower and everything we need. However, there are times when fixing a malfunction or replacing a part could be done conveniently without downtime for the client if spare machines were available.

Eliane Engeler is a freelance journalist in Islamabad, Pakistan. She writes for various print media in Germany and Switzerland, including NZZ am Sonntag, Wochenzeitung, Financial Times Deutschland. She also reports for Swiss TV SF and has served as a foreign correspondent for the Associated Press.
A Portuguese proverb says: “People in Lisbon celebrate, those in Porto work.” Porto in the north of the country has always been the industrial center of Portugal. But when throwing a glance into the factory hall of the Labina Fundição Injectada die-casting company, you might feel inclined to also apply the old popular wisdom about Porto to Portugal’s third-largest city, Braga.

Here you will find the family-owned company in the industrial park of the city of 150,000 inhabitants some 56 kilometers north of Porto. It was set up in 1968 and is headed today by brothers Jorge and José Pimenta. The four factory halls near the Rio Minho are bustling with activity, with machinery hissing, thumping, whistling, and steaming. In intervals of seconds, steering wheels, roof rack elements, and aluminum sections are just being manufactured.

“Our machines are shut down for only four hours daily, between 2 and 6 in the morning,” explains Jorge Pimenta (52), co-owner and technical manager, during the tour of the long factory halls. On a surface area of 5,000 square meters, 19 die-casting machines produce metal frames for car radios and GPS navigation systems. The production list also includes steering wheels, body elements, and engine suspension components for various international carmakers.

Truck manufacturers have aluminum stairs produced by Labina for their vehicles, among other things. And the family-owned factory in Braga supplies the light-alloy structures for the tray tables in plane seat backs for two renowned aircraft builders. In addition to small and straightforward die cast components for the electrical, automotive, and aircraft industries, Labina is also increasingly producing more complex elements with larger surface areas for the lighting sector.

Some 75 percent of its customers are based abroad, especially in Germany, Spain, the United States, and France. Exports also go to Austria, Italy, Hungary, Poland, and Switzerland. Even most of the company’s customers in Portugal are international businesses that operate affiliated companies in the country.

Growing in the crisis

Thus, little can be felt at Labina of the general economic crisis in Portugal and other EU countries. “Whereas numerous companies from our industry

PUSHING THE FRONTIERS ON THE RIO MINHO

Cutting-edge Bühler technology has enabled the die-casting company Labina not only to weather the economic crisis in Portugal, but even to further strengthen its market position.

By Manuel Meyer
Produced in Braga, Portugal, die cast components from Labina are used in a variety of industries.
are suffering heavy business losses and some have even had to shut down, we have maintained our output and sales at a constant level over the past years and even improved them. Actually, the crisis has hardly affected us,” says CFO and co-owner José Pimenta (48).

The name of the success formula of the two brothers is “permanent investment in new technologies and state-of-the-art equipment.” Since 2008, they invest about two million euros a year in their business. They say that it is important for customers to know that a vendor such as Labina always operates at the latest technological level, says José Pimenta. And in this effort, the die casting firm with its roughly 50 employees relies primarily on Bühler. Nine of its 19 die casting machines have already been supplied by this Swiss production system manufacturer, and more are expected to follow.

Portugal’s largest die casting machine

The Labina Fundição Injectada company on the Rio Minho already operates seven Bühler Evolution series die casting machines and a Bühler Carat 130. The most recent purchase is a Bühler Carat 180 with a cutting-edge two-platen die closing unit and real-time-controlled shot technology. With the aid of this investment, Labina plans not only to make a big stride forward in manufacturing technology, but also to access new markets and customers that especially need more complex, thin-section, and large-area die cast components.

When its Bühler Carat 180 goes into service in April, the company will boast the country’s largest die casting machine, capable of casting parts with very high technical requirements. And demand appears to be nothing less than brisk.

Negotiations, it is said, are already being conducted with a large company from the lighting industry. Contacts also exist with other companies. Thus, it appears very likely to José Pimenta that the company will have to buy up to eight new Bühler machines in 2013 with locking forces ranging from 1800 to 2200 kN in order to fill existing orders. He says that a 15,000-square-meter property has already been acquired for building new factory halls.

Advanced technology guarantees growth

The company owners do not doubt for a moment that the machines will be supplied by Bühler. “Bühler has the best and most advanced technology in the marketplace,” says José Pimenta. And his
brother Jorge Pimenta continues by saying that this allows the company to win new customers, retain existing ones, and continuously hold its leading position.

“What is more, Bühler machines can be operated very intuitively. They also operate reliably which makes them more productive and reduces their maintenance costs,” adds José Pimenta. But they say that it is just as important for their company to receive the professional system installation services in the factory and the high level of customer service that Bühler can offer. And both Labina owners emphasize: “Bühler also assists us in designing new dies, a service otherwise not so common in the industry.”

For these reasons, the company has ordered all its new machines from Bühler since 2006. On the basis of continuous innovation and increasing specialization in casting large-area and thin-section die castings, the company has become a top customer also for Bühler in Portugal. Thanks to new capital spending on Bühler machines, the company stands to become a significant die caster in the entire Iberian peninsula, says Marcus Scherler, Bühler Sales Manager for Portugal, with conviction.

**Manuel Meyer** is the correspondent of the Austria Presse Agentur in Spain and Portugal.
Brewery industry acquires a taste for SORTEX

A new application for SORTEX: For the Scandinavian brewing industry, optical sorting solves the problem of fungal contamination in barley. Test results show that this is a good investment for all grain handlers.

Beer drinkers know what they like. And they want it to stay that way. Brewers, maltsters, and purveyors of grain can ensure consistent quality and taste by eliminating substandard barley from the production process. Traditionally, this has been done by mechanical sorting with sieves or aspirators to remove contaminants from the grain before malting.

But it is not just dirt, foreign particles, or other grains that must be removed from barley consignments. After excessive rainfall in Northern Europe in 2011, many producers have been struggling with fungal decay from fusarium which is generally not harmful to humans. However, master brewers believe that red kernels in the malted barley, contaminated with the fungus, cause the beer to gush from the bottle upon opening, rendering entire batches unsellable. And as if this nuisance, causing sales losses and reputational damage, wasn’t bad enough, some grains when contaminated with the fast-spreading fusarium can also produce dangerous mycotoxins.

Bühler can sort it out

Since the defective kernels cannot be detected by mechanical sorting, but are only distinguished by red discolorations, several Scandinavian companies came to Bühler last year for help with optical sorting to maintain quality standards. Most affected are the grain handlers as the first link in the supply chain, though maltsters and brewers have also sought Bühler’s expertise to maintain their reputation and meet EU requirements. Traders are under intense pressure to supply better-quality grain, as some breweries are already buying barley from the UK, Australia, or South America.

Current and prospective customers are invited to visit Bühler’s applications facility in London and bring their product for a trial sorting. In independent laboratory tests at the Research Center Weihenstephan for Brewing and Food Quality (an institute of the Technical University in Munich, Germany), grain sorted on the dichromatic SORTEX optical sorter was shown to be stable and passed the gushing test; other samples failed the test. Clean barley is safe and suitable for brewing – and, hopefully, prevents the final product from gushing all over the thirsty consumer. SORTEX-refined barley can thus be marketed as a hallmark of top quality. And beer lovers can continue to enjoy beverages of a consistently high standard. ■
The SORTEX Z+ identifies contaminated goods and foreign material with high precision based on color, shape, or other optical properties. Most recently, it has begun to see use in breweries to eliminate fungal-affected barley.

Pink discoloration indicates fusarium infection.
Orange mould is another indicator of fungal decay.
This barley grain is free from contamination.
Pasta Perfection

Optimising the drying process has yielded pleasant side effects for Bühler’s customers.

The production of pasta is a cultural technique probably developed simultaneously in different areas of the world, a couple of millennia ago. However, the latest outstanding achievement in enhancing the ancient process of producing this vital and well-loved food comes straight out of Switzerland.

Perceiving that the conventional pasta drying process left room for improvement, Bühler engineers attempted a radical rethink. Up to now, this is how it was done: regular dryers hit incoming, wet pasta with a massive blast of dry air. This dropped moisture levels rapidly, but it also tended to “glassify” the pasta’s surface. Usually, tensions built up in the pasta structure, which then had to be “healed”
out in a lengthy stabilisation process. What to do? One might compromise on drying time by simply reducing the heat and letting pasta dry slower. The Bühler experts weren’t satisfied so easily. They simply innovated the whole process to dry pasta more evenly, based on scientific understanding and know-how.

Gently does it

With Bühler’s new pasta-dryer, the Ecothermatik™, smaller volumes of humid air are used to do the drying, so pasta moisture sinks more slowly. Thus, the pasta remains in its rubbery state throughout the drying process, letting the moisture escape steadily and eveny from the pasta without solidifying its surface. This is ideal for moisture diffusion and stress relief. The desired cross-linking within the gluten structure of the pasta is also facilitated this way, resulting in pasta of exceptional quality. Additionally, while the gentle approach avoids tensions it also cuts stabilisation time in half. Only after it enters the cooling zone does the pasta glassify into the dry strands of pasta that can be bought at the supermarket.

The positive side effect for Bühler’s customers? Apart from actually shortening the drying process and producing highest quality long-cut pasta, the new Ecothermatik™ turns out to be an energy saver. Compared to conventional dryers, it uses 40% less heat, 20% less cooling energy and 10% less electricity. Moreover, its streamlined design does double duty – not just cutting energy use, but also allowing easy access for cleaning and maintenance. In the hard-fought world of pasta making, this amounts to a major improvement. Cost reductions created by fuel savings, Bühler estimates, can seriously increase manufacturing margins.

Helping to save the planet

While conventional dryers’ exhausts can sometimes be re-used in space heating, the much hotter and wetter exhaust of the Ecothermatik™ can be (and is) recycled to the process. Exhaust exiting the dryer is fed to a heat exchanger atop the unit itself. This condenses out water and directs its energy back into the heaters in the dryer. The result: the kilowatt-hour consumption is reduced from around 250 kWh to 150 kWh per ton of pasta.

This 40% saving yields a double benefit. First, it goes easy on the environment. If, for example, Ecothermatik™ were used to produce Italy’s annual output of long-cut pasta, it would eliminate the release of 28 thousand tons of carbon dioxide. Second, it delivers better margins to pasta producers many of whom work to tight profits. By cutting their demand for drying energy so sharply, they can put an extra 1% on the bottom line, which represents a substantial boost to profitability.

What the experts say

Appliance of science

With Ecothermatik™, we have put serious knowledge of physical chemistry and engineering into practice. This is Bühler’s forte – using the very best science to produce the very best food by efficient processes.

Dr. Andreas Kratzer, Head of Market Segment Pasta, Business unit Pasta & Extruded Products

Serendipity

Excellent R&D – the success of Ecothermatik™ shows how it cannot always be planned precisely. This project started with research on the drying of rice, which we then transferred to drying of pasta. At first our focus was on keeping the food in the rubbery state to avoid cracking, but as we progressed, we realized two other benefits. One, drying in the rubbery state allows better proteins coagulation and cross-linking, which gives the end product outstanding firmness and cooking stability. Two, it allows for heat recycling which massively cuts energy consumption.

Urs Keller, Head of R&D, Business unit Pasta & Extruded Products

The best is yet to come

Since its initial development, Ecothermatik™ has come a long way. Now protected by two Bühler patents, in 2010 it went commercial at a demonstration plant in Germany that has provided not only tons of tasty spaghetti but also a wealth of operating data to share with potential customers. The process is available at capacities of up to 1,750 kg per hour, and scale-up work is continuing to make Ecothermatik™ available at larger output ratings.

Juraj Bartanus, Product Manager, Business unit Pasta & Extruded Products
Developed for emerging markets

Last year, Bühler launched two new products that are aimed at the emerging markets in Asia: a bead mill and a three-roll mill. Named Trinomic™ 600 and Cenomic™ 3, the two machines – which are both manufactured in China in the accustomed high Bühler quality – focus on customers’ basic needs in Asia.

Rugged three-roll mill offering high productivity

The Trinomic™ 600 three-roll mill manufactured by Bühler China, which is also manually controlled, allows viscous pastes such as printing inks for magazines and journals, lipsticks, lubricants, or metal and glass pastes for the electronics and solar industries to be manufactured. Its operating quality is high: Hydraulic roll pressing guarantees high productivity and consistent, reproducible pressure conditions inside the grinding area. In addition, the machine is equipped with a cooling system that allows individual adjustment.
Bühler China has been manufacturing a bead mill since 2011 that is capable of grinding products of highly diverse viscosity. It is suitable – among other things – for making publication gravure printing inks, ceramic suspensions for glazing sanitary ceramics such as washbasins or bathtubs, and anti-corrosion coatings for the automotive and ship-building industries. The machine is made of wear-resistant materials and equipped with the EcoMizer™ grinding disks of DraisResist™ (cast chromium steel) which ensure efficient grinding. Grinding disks and grinding chambers are also available in DraisElast™ (polyurethane). They enable products to be ground which are not allowed to contain any metal contaminants, for example ceramic suspensions for the electronics industry. Moreover, the components of the grinding chamber can be individually exchanged which increases the life cycle and flexibility of the unit. The Cenomic™ 3 is operated by manual controls.

Both machines satisfy international safety standards for protecting the operating personnel. The Trinomic™ 600 and Cenomic™ 3 are the first machine sizes to be successfully launched in Asia for the Asian marketplace. Other design versions and machine sizes are already being planned and will also be available shortly on a global scale.
Closer, faster, face-to-face

Bühler customers worldwide want to rely on Bühler as a partner throughout the life cycle of their plants. The Service Stations operated by Bühler satisfy this need directly on site around the globe.

For customers around the world, the condition of their rolls throughout their life cycle is one particularly important criterion. After all, roller mills are the key machines in the grain grinding process. But rolls as such are wear parts. As soon as the corrugations (flutes) become blunt and smooth rolls are worn down – which will inevitably happen at some point of time –, a consistently high processing quality will cease to be ensured. As a result, the profitability of the entire plant will suffer. Timely servicing prevents the high costs caused by repairs, exchanges, and the associated downtimes. In order to offer more customers around the world this and additional important services, the Customer Service staff joined forces with the management of Bühler China in 2007 to develop the Service Stations model. They are locally based and thus fast and efficient while delivering top Bühler quality at all times.

21 Service Stations worldwide …

The first Bühler Service Station was opened in the Chinese city of Xi’an in 2008. It was not long after

Bühler Service Station in Xi’an, China

Success story #1

Pingliang Changfeng (grain milling industry) is a small-scale customer who does not maintain any stock of spare rolls. When the rolls have to be reconditioned, he contacts Feng Gaoshen, the Station manager of Bühler in Xi’an, in order to find out about the best time for the overhaul. In order to provide fast and efficient help, Feng Gaoshen prioritizes orders or works overtime. Pingliang Changfeng greatly appreciates the fast responses and the efficient collaboration.
its opening before satisfied customers started inquiring for additional services. In addition to the continuous expansion of the portfolio, more Service Stations were soon opened in China as well as in other regions. Today, Bühler operates 21 Service Stations around the globe – and the number is increasing. The basic services – regrinding and recorrugating (refluting) of rolls; sale of frequently demanded spare and wear parts from stock; retensioning of sieves; or production of ancillary plant components – is usually identical, with individual additions being made according to regional needs. But the benefits for customers are always the same: close personal relationships, easy availability and thus short response times, short shipping distances and therefore lower costs, and last but not least top Bühler quality from a single source.

The Service Stations are all located in areas where large numbers of customers are concentrated within a radius of maximum 800 kilometers and are therefore easy to reach.

**...Tendency increasing**

The positive feedback received from customers encourages Bühler to continue building upon the Service Station principle. Alone in the current year, six additional Stations will be added. This is because the Service Stations reflect precisely what customers really want and need.

In order to offer customers even more extended services in the future, efforts are being made even today especially to enhance the process competencies in the Service Stations. Beside competent service technicians, process technologists are to be increasingly available to offer advice and to directly process complex customer inquiries.

For more information on the Service Stations, please contact:
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**Bühler Service Station in Lusaka, Zambia**

Opening:
2011

Employees:
5

Customers served:
25

Roll reconditioning jobs per month:
22–28

**Success story #2**

Mushe Milling, customer of the Service Station in Lusaka, recently had to replace a fan drive. The plant was shut down for about 18 days because the drive could not be restarted. Therefore, Albert Foxcroft, Bühler Service Station Manager, was called in for support. He was at the customer’s site just after eight in the morning. “We found that only a few settings were needed on the drive which the customer quite obviously was unable to find. At 9:22 a.m., we restarted the plant.” This prompted maintenance manager Mr. Ashu Mathur to say happily: “That is exactly why I am so pleased to have Bühler in Zambia!”
This year’s harvest

Always blame the weather, runs a popular saying. And for the wheat market weather shocks indeed prove harmful. Different measures have been put in place to stabilise the yield and its quality in protein, but food security also depends on factors such as pricing, or adequate storage.

By Ed Targett

Drought in Argentina and Brazil, and protracted dryness in Canada and North America threaten both yield and quality of wheat crops this season. However, the global increase in wheat area, and the largest U.S. corn plantings since 1944 at close to 95 m acres have mitigated the impact.

But the UN’s Food and Agriculture Organization remains concerned about high and volatile food prices in the wake of the price spikes of 2008 and 2011 and that price shocks are unlikely to prove a matter of the past.

“Demand from consumers in rapidly growing economies will increase, population continues to grow, and any further growth in biofuels will place additional demands on the food system. On the supply side, there are challenges due to increasingly scarce natural resources in some regions, as well as declining rates of yield growth for some commodities. Food price volatility may increase due to stronger linkages between agricultural and energy markets, as well as an increased frequency of weather shocks”, the Organization stated in its annual report on the State of Food Insecurity in the World.

For food processors, the latter are proving a significant concern. Martin Savage, Trade Policy Manager at the National Association of British and Irish Millers, said, unpredictable variation in protein level of crops remains a persistent problem.

He explained: “We look for a minimum spec of 13% protein with good functionality. Infrared spectrometry can reveal that, but at the processing end we are also looking for a harder-to-measure quality level that reveals itself in dough or products themselves. Good yield and protein as a crude measure of performance are important, and weather is always a concern on that front. Is the crop late? Is it picking up the nitrogen it needs? What quantity of high-protein product will we need to buy in to complement the flours?”

International Grain Council (IGC) analyst Amy Reynolds, though, seems confident: “Whilst volatility by its very nature is difficult to forecast, it is safe to say there is no shortage of wheat out there. There are plentiful supplies in Australia, and Russia has been seeing bumper crops. There are indications the Ukraine has been asking traders to rein in exports, but we are looking at a well-supplied market.”

Despite such forecasts, which have traders cautiously bearish on wheat prices at present, many agree that consistent high prices present incentives for increased long-term investment in the agriculture sector which can contribute to improved food security in the longer term.

A surge in production as a result of the price spikes in 2008, epitomised by this year’s record corn plantings in the U.S., illustrates the incentives provided by high prices.

Still, supply concerns revolve not only around harvest conditions or crop quality. With post-harvest losses running at significant levels in many low-income countries due to insufficient or sub-standard storage, refrigeration, and processing facilities, the investment is one that could have exponential effects at both the processing and harvest junctures.

Ed Targett is a freelance business writer. He has a long-standing interest in international affairs and environmental issues.
Selected trainings and courses from May to July 2012

Bühler offers a large selection of courses either at your local production site or in our Training Centers. Here is a list of our upcoming courses.

→ **Grain Processing & Grain Milling**

In our Flour Milling Technology I and II courses, the focus is on hands-on work in a flour mill. In our Expert Milling course for Experts, you will deal in depth with flow chart design and learn how to fine-tune the process parameters. The course on Oats Processing focuses on the operations and flow charts applied for processing oats.

→ **Die Casting**

The Process Optimization course imparts – among other things – the basics of metallurgy, the fine-tuning of casting profiles, and knowledge of casting methods which reduce the wear and tear on the die. Our Carat Maintenance Course centers on the design and working principle of the Carat die casting machine. In the Alloy Treatment & Laboratory Science course, you will learn about the metallurgical structure of individual die cast components and other subjects.

→ **Chocolate, Cocoa & Coffee**

In our Chocolate, Laboratory, and Depositing & Molding courses, we will show you – among other things – how the properties of different raw material components will impact chocolate mass production; how you can optimize the flow characteristics of your chocolate by rheological measurements; and about the advantages and drawbacks of the OneShot application.

→ **Pasta & Extruded Products**

The practice-oriented Extruded Products Workshop Food held in the Bühler Extrusion pilot plant in Switzerland focuses on Bühler twin-screw extrusion technology and drying. The Pasta Technology Seminar enables attendees to gain a comprehensive understanding of cutting-edge pasta equipment and pasta production process technologies.

→ You will find detailed information on the course contents, locations, dates, languages, available places, and fees, including an online registration possibility, at [www.buhlergroup.com/training-courses](http://www.buhlergroup.com/training-courses).

→ Would you like to know which trade shows Bühler will be attending in 2012? You can find the exhibition overview from May to July 2012 on our website at [www.buhlergroup.com/events](http://www.buhlergroup.com/events).
The world is a habitat, not just a market. Bühler is the global technology partner for food processing, chemical process engineering and die casting. To address environmental challenges, Bühler creates innovative solutions that enable more efficient use of resources. With optimized resource utilization, customers can produce better-quality finished products and generate greater value while enjoying the benefits of the company’s commitment to a better world – when dealing with precious raw materials, energy and food safety.

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