INNOVATION
Invention and improvement are the way forward

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FOCUS

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Dear Reader,

Since its very beginnings, our company has been dedicated to innovation based on a determination to do things better and to do them differently – not for the sake of novelty, but because we believe that we can help our customers improve their business. That is why we constantly strive to improve our machines and to make our production processes and those of our customers more efficient, for instance by reducing losses of produce during processing or by enhancing energy efficiency.

On the following pages, you will find several examples of innovative products that exemplify our commitment to cutting-edge technology and meet the highest quality standards. At the same time, you will also be able to read about how we adapt to local and regional requirements in the many countries where we operate. Here, the culture of innovation goes hand in hand with local expertise and the ability to adapt and respond to new challenges as they arise.

As part of our close cooperation with other companies around the globe, we initiated a Supplier Innovation Partnership Challenge to bring on board new ideas from our partners. We are equally eager to tap the know-how of our own staff, wherever they may be based: our internal Innovation Challenge has also generated great suggestions.

We wish you a pleasant read.

Calvin Grieder, CEO
DIE CASTING: AUDI RELIES ON BÜHLER STRUCTURAL TECHNOLOGY

Audi, the German premium carmaker, is investing in an aluminum die casting foundry at its new location in Münchsmünster, close to the company’s headquarters in Ingolstadt. Die cast components are a core element of the Audi lightweight construction strategy for the body in white stage and help to reduce carbon emissions over the product lifecycle. For this reason, the aluminum die casting technology will be one of the core competences for the new Audi production area. In its efforts to ensure the efficient production of such parts, Audi is relying on Bühler technology and, for this purpose, has in an initial stage ordered two 32,000-kN CARAT die casting cells to produce structural car components.

BRESCIA PRESSE S.R.L. JOINS BÜHLER TECHNOLOGY GROUP

Bühler’s Die Casting business unit adds to its range of services in Europe the reconditioning and retrofitting of die casting machines and systems with the acquisition of the core activities of the Italian company Brescia Presse S.r.l. A close collaboration since 2005 paved the way for the expansion of Bühler’s portfolio. Brescia Presse S.r.l. has some 30 employees and senior staff who will be retained by Bühler. The emphasis will be on overhauling Bühler die casting machines of all types and sizes, without excluding non-Bühler machines. The benefit for customers is that they now have a single source offering complete and competent support in every respect.

BÜHLER SETS FOOD SAFETY STANDARD WITH NEW THERMAL PROCESSING SYSTEMS

Pitched floors to prevent water from pooling, water management systems for drainage, plus a wealth of features to make cleaning easier and faster; these are just some of the food safety innovations Bühler Aeroglide is incorporating in its latest generation of thermal processing machinery for food, animal feed, and industrial products. Bühler Aeroglide Food Safety Manager Steve Blackowiak said that the innovations were not about slapping a package on a machine and calling it “enhanced” or “extra sanitary” – rather, they are a consequence of the engineering mindset that permeates all Bühler Aeroglide designs: “Food safety has always been our number one concern in system design, and will remain so as we continue to provide innovative solutions that meet the changing sanitary requirements of our customers,” he said.
BÜHLER TO SUPPLY TWO BREAD FLOUR MILLS FOR OLAM

OLAM International Singapore ordered two flour mills for their operations in West Africa. One mill is to be installed in Diamniadio, Senegal, and features a processing capacity of 500 metric tons per day and a storage capacity of five times 5,000 tons of wheat. The other mill with the same processing capacity but a slightly smaller storage capacity of four times 5,000 tons of wheat will be located in Doula, Cameroon. OLAM International is one of Bühler’s major customers and has businesses across the Grain Processing and Food Processing division. Besides the two mills in Senegal and Cameroon, Grain Milling is presently constructing two plants in Nigeria.

MORE CUSTOMER TRAINING COURSES

Bühler Grain Logistics began offering customer training courses in 2010. Since then, the demand for places has increased dramatically. This is why the company will now increase the number of courses it offers in 2013. Held at either Bühler’s training facility, or on the customer’s own premises, courses cover every aspect of servicing and maintaining Bühler cleaning equipment, conveying systems and grain dryer. Theoretical instruction is combined with practical modules on the machines, giving attendees plenty of opportunity to experience knowledge transfer hands-on. To find out more, or book a place on one of the courses, e-mail Bühler Grain Logistics Customer Service on service.gl@buhlergroup.com or call +49 8461 701 701.
“INNOVATION IS COMING BACK AS A GLOBAL DRIVER OF SUCCESS”

Since 1872, when the company developed the first cast-iron rollers for flour mills, Bühler has placed a premium on innovation. As CEO, Calvin Grieder aims to support the company’s strategy with the right innovation portfolio and ensure that the portfolio is relevant to customers.

By Christopher Findlay

Bühler’s mission statement is “Engineering Customer Success”. To what extent does innovation promote that purpose?

Calvin Grieder: When I joined Bühler 12 years ago, I was struck by the culture of innovation that permeates the company. Our owners are true entrepreneurs whose aim was never just to make things, but to do so better and in a different way. We have always set aside significant funds for innovation. Even during difficult times, we invest at least 4 to 5 percent of our turnover into R&D – an extremely significant share by the standards of our industry that underlines our commitment of driving the company through innovation. Some of this is spent on improving our portfolio, some on developing new products, and some on basic research.

Where do you see a particular need for the development of innovative technologies?

Calvin Grieder: We aim to feed the world by helping customers supply more and better food through adapting to a changing environment. One factor is energy: The total power needed to operate the machines Bühler produces per year is the equivalent of one nuclear plant’s annual output. Reducing that figure will help our customers save emissions, and of course expenses. Bühler will reduce primary energy input by 25 percent per ton of finished product for our customers by 2020. There is also a growing awareness that water use for raising beef cattle is now unsustainably intensive; so we ask ourselves how the protein in grain and rice byproducts can be used for viable food sources. But we are also thinking innovatively about our customers’ manufacturing models. We are developing a training module with the University of St Gallen to encourage business model innovation. For instance, it may be better to stabilize product close to supply and shift the final production steps closer to demand on a district and city basis, tailored for local taste.

Knowledge of and proximity to markets is a crucial factor.

Calvin Grieder: Absolutely. Innovation must address customer needs to be relevant for markets. In-depth market understanding tells us how our customers work, how they create value, and the nature of the market in which they operate. If you know these factors, you can work with them to create more value. Not many companies of our size operate on a global scale, as we do. We

CEO Calvin Grieder believes Bühler’s greatest asset is its culture of innovation.
have to help our customers differentiate themselves in local and regional markets. In order to define our innovation targets, we study trends such as population growth, geographic shifts of wealth to areas with different dietary needs, or fluctuations in buying power.

Which goals do you seek to achieve with your innovation activities?

Calvin Grieder: The first is food safety. The second is delivering intrinsic nutrition from the crop to the consumer. And finally, we aim for sustainability along the value chain, for instance by reducing the 25 to 40 percent of post-harvest food losses in developing markets. In all these areas, we are introducing more automation, control, traceability of information, and validation under the heading of “intelligent processing”; we aim to identify the conditions in the markets in which our customers operate; and we develop business models to help customers create more value. The intelligence of the processes we supply is critical for achieving our goals in terms of food safety, nutrition, and sustainability.

Does Bühler conduct all of its R&D in-house?

Calvin Grieder: Not at all. We have just initiated the World Food System Center together with ETH Zurich, which researches challenges linked to food security, dominant crop types, climate, or demographics. But our academic network includes not only renowned European institutions such as EPFL and the Deutsches Institut für Lebensmitteltechnik, but also Kansas State University in the US or the Central Food Technological Research Institute (CFTRI) in Mysore, India. By rewarding the best students and setting up internships, we are building our academic network together with our business, while also attracting talent.
You have also initiated competitions to tap the know-how of suppliers as well as Bühler’s own employees.

Calvin Grieder: Our concept of “opening innovation” involves both internal and external cooperation. Externally, we issued the Supplier Innovation Challenge to 65 of our top suppliers last year to support us in energy reduction in the production lines we sell. We are currently still evaluating five proposals, and will be building strong innovation partnerships on the basis all of these finalists.

We also seek to source and drive innovation internally. Leveraging the internal innovative potential of an entire company is a challenge. For several years, we have been running an innovation competition for our own staff. The concept is to be as inclusive as possible and break down barriers in order to solicit proposals for innovation. [See following pages.]

What are you doing to protect the intellectual property generated from R&D?

Calvin Grieder: We want to ensure that the IP that is core to our business is well protected and be able to police that. To that end, the size of our internal IP team here in Uzwil has recently been doubled. But I am skeptical about the ability to protect IP over the long term. I’d rather have our innovation drive be so fast that we can stay ahead of the curve and make it hard for competitors to keep up.

Ultimately, what’s good for our customers is also good for us: Innovation should result in simpler, not more complex products. In the current economic climate, innovation is coming back as a global driver of success. At the end of the day, you can only remain competitive if you remain innovative.

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NEW PRODUCTS, NEW BUSINESS MODELS

Changes, improvements, and new inventions can lead to new and better goods, but also to new ways of doing business for Bühler and its customers. Some examples:

In many countries, local cereals are gaining importance – like teff in Ethiopia or atta in India. For instance, every year, over 60 million tons of atta flour are processed to make chapatis and unleavened bread in India on small stone chakki mills, which creates problems with hygiene and contaminants. Bühler has developed a hygienic mill to deliver food-safe atta flour that replaces 20 traditional chakki mills. This is a major step in capturing a new market, but also in enabling the industrialization of a staple food in India.

Bühler’s joint venture in China with DSM allows customers to create new kernels from broken rice, which was considered a waste product. The kernels are fortified with nutrients to make Nutri-Rice™. This is a completely new business model that opens up opportunities whose potential has yet to be fully explored.

One successful innovation proposal that Bühler has already brought to market is the Kubex™ pellet mill, co-developed with a German supplier of direct-drive systems. The switch from a standard belt drive to a direct drive reduces energy use by about 30 percent. Not only did one of Bühler’s main suppliers come up with this technical innovation, they also developed the overall design concept to improve performance and the usability of the machine.
Bühler’s technological innovations are remarkable in scope, variety and their – sometimes simple, sometimes sophisticated – ingenuity. These inventions may be triggered by the need to save energy. Or by rising product demand. Or by the concern to provide adequate nutrition. A feature they all share is an added value for Bühler’s customers. Six examples from different business units highlight Bühler’s continuing quest for improvement.

Faced with fierce competition and low margins, food producers around the world must produce for both the higher and lower price segments, depending on demand. Innovative Sortex technology from Bühler combines and optimizes a variety of cutting-edge technologies into sorting machines that give food producers and other companies full control over the production costs associated with sorting.

With the technologies tailored to each customer based on their sorting needs, the machines accurately detect and remove unwanted elements from the product stream, e.g. glass, stones or discolored grains of rice from a premium batch of basmati. State-of-the art technology including cameras, signal-processing, and feed, lighting and ejection systems enable the machines to notice the faintest irregularity, separating the wheat from the chaff based on color, shape or even a product’s moisture profile.

The optical sorters use Bühler custom camera technology to detect subtle color differences. In addition, machines can also be fitted with PROfile shape-profiling technology used for applications like removing stalks from green beans. Precision sorting based on moisture content is used for instance for removing contaminants from frozen mixed vegetables that are notoriously difficult to detect. Further sorting miracles are performed by Bühler’s enhanced InGaAs technology, which uses short-wave infrared imaging to monitor a product’s chemical properties. It can detect unwanted nutshell in a batch of nut kernels, based on the oil content.

For food-sorting applications, the results are batches of product that match a producer’s individual quality requirements. Sortex technology allows them to achieve good margins on lower-grade products or, with high-quality products, demand higher prices.
DEPOSITING THE EFFICIENT WAY

Dripping and tailing chocolate across the production line is history with Bühler’s invention of heart valve-inspired nozzles.

When chocolate or fillings like caramel or nougat drip or tail on the production line the fault does not lie with the confectioner’s lacking expertise. Traditional rigid nozzles are to blame for the waste of raw materials as well as the loss of time and performance on the moulding line. The cure for this lamentable waste of product and productivity: Bühler’s patented FlexiNozzles for depositing systems use flexible valve mounts to attain clean tail breaks when material is deposited into the mould.

The innovative system is based on a mechanism that self-adapts to the changing viscosities and flow characteristics of different masses being processed. FlexiNozzles technology copied the mechanism of the human heart, with flapping valves that open up to allow for flow in a single direction. When the pressure is removed, the flaps move back and cut off the product flow. A brief retraction helps improve the closing performance. The result is precision-moulded confections that meet weight requirements exactly and are easier to pack, thereby increasing also efficiency on the packaging line.

The FlexiNozzles are made from high quality food proof materials and coatings. The elastic material used for the valve elements was especially developed to ensure that, in the unlikely case of breakage, a standard metal detector could detect it. Therefore there is at no point any risk of contamination of the product. Furthermore, the system is easy and quick to install and requires only a minimum of maintenance. The nozzles can be mounted to all types of depositors and do not need to be changed for materials of different viscosities. Producers of chocolate, candy and jelly therefore no longer need to switch nozzle plates and thus avoid downtime.
Stricter regulations to reduce emissions and a stronger focus on energy savings are driving the market for glass with solar control coatings. Particularly in areas experiencing a construction boom, like Asia, Eastern Europe or the Middle East, demand is high for architectural glass with low-emissivity coating and an attractive appearance.

So-called Low-E coating blocks the transfer of heat through the glass since light is reflected instead of absorbed, functioning as an infrared mirror. This useful characteristic comes in handy in most northern countries to keep heat inside, or in places like the Gulf region to keep the heat out. Companies that produce such glass or specialize in the coating of glass are in need of highly efficient machines to make high volumes of the large-plate glass of typically 6 by 3 meters with uniform optical quality. They must also meet rising demand for custom-defined coatings.

Apollon, Bühler’s vacuum coating machinery for architectural glass, typically produces 3 to 5 million square meters of glass per year – and higher capacity is possible. Depending on the load size, a jumbo glass pane emerges from the machine every 30 to 60 seconds.

Based on leading-edge coating tools from Leybold Optics, which became part of Bühler in May 2012, Bühler’s optimized vacuum and transport system allows producers of coated glass to achieve short machine cycle times and to maximize productivity with high reliability. What’s more, the configuration of Bühler machines is extremely flexible to allow for a wide range of variations to the sequence and amounts of material applied, such as silver and oxides. Since coatings are applied in continuous mode with panes always under a vacuum, the optical quality and uniformity of the coating is guaranteed.

Processing and transporting glass panes under a vacuum yields uniform high quality results.
Pasta producers now have a choice when deciding how to dry their long goods. Instead of blasting pasta with hot, dry air and creating stress between the pasta surface and its core, pasta makers can use a new process from Bühler that dries pasta stress-free, guaranteeing the best quality.

In addition, this new process allows for the production of long goods pasta using up to 40 percent less thermal energy, since hot exhaust air from the dryer is reused as in-process energy. Improved dryer aerodynamics and smart-thermal flow management help to save another 20 percent on cooling energy and 10 percent on electrical energy. Furthermore, the relatively humid drying air prevents the pasta surface from becoming glassy. It stays in a rubber-like state so stress cannot build up. This reduces the stabilization time to only 75 minutes. The pasta color is also adjustable by selecting different drying temperatures.

The Ecothermatik™ not only creates pasta with excellent cooking stability and a firm texture, its generous design for best aerodynamics improves access to the machine as well. This makes the Ecothermatik™ user friendly, as well as easy to clean and maintain.

Gently does it: Bühler’s Ecothermatik™ produces stress-free pasta in less time and with less energy.

**DRYING REVOLUTION**

Bühler’s innovative Ecothermatik™ pasta dryer uses humid air and provides up to 40 percent thermal energy savings.
FOCUS

Children depend on the right vitamins and minerals to develop mentally and physically. Yet research shows that a third of the world population does not eat enough micronutrients. The condition is called “hidden hunger”, since people suffering from such deficiencies may not appear to be facing hunger. They take in enough calories, but an unbalanced diet – usually consisting of starchy foods like white rice, wheat or corn – impacts health over the long term.

As governments and NGOs fight malnutrition, a new type of enriched rice could help whole populations avoid vitamin deficiencies if consumed on a widespread basis. NutriRice™ kernels are made with a patented process developed jointly by Bühler and the Dutch company DSM. The new technology turns a mix of rice flour from broken rice kernels and the desired micronutrients into what looks and feels like a perfect grain of white rice, using an extrusion process. The NutriRice™ kernels are then mixed in with natural rice at a low ratio of one or two kernels to 100. Unlike other types of enriched rice, which are obtained by spraying micronutrients on rice kernels, the vitamins and minerals in NutriRice™ are inside the kernel and are not washed out easily. Studies show that more than 90 percent of added vitamin A or folic acid reaches the bowl. At an additional cost of only 3 to 5 percent, the new technology and NutriRice™ may be one of the most cost-effective ways to fight malnutrition worldwide.

In terms of nutrition, NutriRice™ kernels stand out from the crowd, even though optically in reality they do not.
Made from different blends of wheat, atta flour is an important staple food in India, Pakistan and Bangladesh for flatbreads such as chapati, roti, naan and puri. In India, demand for high-quality atta flour is strong, driven by rapid urbanization and a growing, quality-conscious middle class.

To achieve higher output and meet current hygiene standards, Bühler has developed an industrial process to make premium, hygienic atta flour with the same taste and feel of that produced with traditional chakki mills. The core of the new process is the stoneless, roller-based PESA mill, featuring high capacity and maximum food safety. It is easy to clean and requires less maintenance than a chakki mill, whose stones have to be redressed every three to four weeks. In addition, the innovative grinding system allows producers to differentiate their atta flour by adjusting various parameters. The PESA mill can produce flour with specific levels of water absorption, starch damage and granulation, to allow for individual market preferences.

The new atta flour process technology went through extensive testing phases in Uzwil and Bangalore to ensure it did not compromise the well-loved taste and characteristics of traditional atta flour. Bühler also involved India’s Central Food Technological Research Institute (CFTRI), an independent testing body, to analyze the new flour. Blind tests confirmed: taste and mouth feel are authentic.

Bühler’s innovative PESA mill uses high-compression grinding technology specially adapted to the particular characteristics of atta flour production. As a matter of fact, with its high throughput and the machine’s compact design, a single PESA mill can replace up to 20 chakki mills at traditional milling facilities. First full-scale plant deliveries with a capacity of 150 tons per day are planned for 2013 – and will bring significant productivity gains and cost savings in an increasingly competitive market.

SECURING FLOUR SUPPLIES FOR FLATBREAD

Bühler’s new roller mill PESA improves the quality and quantity of atta flour.

Flatbreads complement all kinds of curries and are a staple food. Right: A traditional chakki mill.

Bühler’s application center in Bangalore.
OPENING THE DOOR FOR NEW IDEAS

Bühler actively solicits innovative approaches to doing business by challenging external suppliers and internal staff members to come up with better ideas.

By Christopher Findlay

The Supplier Innovation Partnership Challenge
This competition was first announced at the Bühler Supplier Event Day in December 2011. The 65 participating top suppliers were asked to propose ways of minimizing energy use in Bühler machines. On the one hand, the Challenge was a straightforward request for bright ideas. On the other, it was an attempt to reinvent the traditional relationship between supplier and purchaser: Seeking new solutions for old challenges together is a mutually beneficial approach that makes it easier for all parties to be successful in a competitive market.

For the Bühler managers, who had already occasionally received good suggestions from suppliers in the past, the topic of energy efficiency was important for two reasons: They wanted to reduce energy input in their own production lines, and they were determined to lower the energy consumption of machines sold to customers. Over a three-month period, 41 proposals were submitted. After whittling these down to ten, the steering committee spent two hours meeting with each of these suppliers. Five proposals have moved on to the next round. Bühler will be building strong innovation partnerships on the basis of all of these finalist proposals. Bühler plans to extend the Supplier Event Days to its entire network of suppliers, and to set up regional or even local variants of the Innovation Partnership Challenge, further transforming the relationship with its business partners and developing new products with them at eye level, proving that all of its suppliers – be they global corporations or small and medium-sized enterprises – can work with Bühler in pursuing innovative solutions.

Innovation Challenge for staff members
The quest for smart suggestions also extends to Bühler’s internal innovative potential. The first Innovation Challenge for staff members was held on the occasion of the company’s 150th anniversary in 2010. In order to be as inclusive as possible, a website was set up for collecting ideas and seeking out team members to develop the proposals. Staff members were given assistance in pitching and presenting suggestions.

In 2012, this process has generated over 300 ideas. A committee picked 150 ideas in collaboration with the company’s local and regional branches. The 30 best of these were identified and published on the website, where team members could blog on their ideas and present the proposals for company-wide scrutiny. Management then issued a virtual fund for all staff to invest...
in the idea they most wanted the company to implement. The three best ideas automatically went through to the next phase, and the jury picked five others.

**International teams**

Each idea is backed by a team of five, with some international lineups working through an online tool for remote collaboration. Currently, the teams still in the running include two teams from India; one team from India, the US, and Brazil; one team from Switzerland, Spain, and China; one from Germany; one mixed German-Swiss team; one all-Swiss team; and a team from South Africa. A professor in entrepreneurship gave each team a three-day course on how to turn an idea into a business plan, and management allocated coaches to each team.

**Culture of innovation**

The purpose of this exercise is not only to generate new business for the company; the overarching aim is to foster a corporate culture of innovation and to identify smart entrepreneurs who are able to think outside the box. If their business idea is strong enough, the winners have the opportunity to participate in creating a dedicated company for marketing their idea within the Bühler structure. The outcome of this internal competition will be announced later this year.
SMOOTH AUTOMATION FOR EXCELLENT CHOCOLATE

When specialty chocolatier Läderach from the Swiss canton of Glarus decided to build their own production facility, the contract went to Bühler who was able to offer both cocoa processing and chocolate couverture production automation from a single source. Now, the high-tech chocolate factory has been successfully inaugurated.

By Barbara Simpson  Photos by Martin Schmitter and Peter Tillesen

Jürg Läderach, owner of the eponymous Swiss artisan chocolatier aims to sustainably improve the high quality of his chocolate delicacies by processing only first-rate, specially selected raw material with the best technology and processes available. “Chocolate is my declared passion, and I am passionate about innovating the business,” he explains. After consulting with the next generation of the family-owned business, he invested the biggest sum in company history – almost 18 million CHF – in building a state-of-the-art chocolate factory from scratch. The new facilities now enable Läderach to manage the entire value chain of chocolate fabrication from the cocoa harvest to the finished chocolate delicacy sold in their own specialty shops worldwide.

While sourcing the best available raw material involves buying directly from the producer in the origin countries in South America or Africa, the search for the best available technology and hardware for their factory led Läderach to Uzwil. With Bühler, they were able to procure process technology, machines and control systems for both, the cocoa and chocolate production lines, from the same supplier. A key feature in the new set-up is Bühler’s production process control system WinCos. Mirroring the best in Bühler process expertise, WinCos is a comprehensive system, based on products from the automation market leaders, that is compatible with all common interfaces.

High Quality, High Productivity
“Flexibility and autonomy were key for Läderach”, recalls Beat Reichle, Bühler’s head of sales and quotation food processing automation. “And WinCos was the

The starting point for exceptional chocolate is highest quality raw material: cocoa beans at Läderach’s production facility in Bliten.
perfect answer to these requirements.” With Bühler’s innovative plant control system the production facilities run fully automated with remote process control which means maximum uptime and consistent quality while retaining flexibility. New data and recipes are automatically made available on both production lines ensuring optimal performance and traceability. Production safety is high due to integrated machine control. An alert system even sends text messages to the mobile phone in cases of urgency and facilitates remote service access. “It’s an impressive list of features,” states Reichle, “but what the Läderach engineers really value now is that the system is very user friendly – and of course the know-how support by Bühler.”

The fact that the first time implementation of WinCos on a cocoa processing line with a first time chocolate producer went so smoothly is owed to the excellent teamwork and collaboration on all sides, within Bühler as well as with Läderach’s process control team. “We definitely profited from the cooperation with Bühler,” confirms Jürg Läderach. “We are a very small manufacturing company whose production has to be flexible. Bühler has proven that flexibility is exactly what they can deliver.”

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Above: Läderach’s production facility in Bilten.
Center left: single-shaft conches Frisse-ELK for refining chocolate.
Center right: Bühler’s winnowing system W for cocoa nibs.
Below left: crushing and winnowing system for cocoa beans.
Below right: chocolate refiner Finer™.

TIMELINE

- Signing of contract: December 2010
- Building year: 6 June 2011 – 7 June 2012
- Start of installation: December 2011
- Commissioning: April 2012
- Official opening: 6 September 2012

CONFISEUR LÄDERACH AG

Formerly a supplier to artisanal chocolatiers and pastry professionals in the entire world. Läderach will be able to strengthen its consumer brand with the new production facilities in Bilten. The company now has 800 employees worldwide.

The new complex spans 2,200 square meters just south of the already existent distribution centre in Bilten, Glarus, and is set to create an annual output of 2,000 tonnes of couverture, the basic product for artisanal chocolate confectionary.
LESS POWER, MORE FLOUR

To combat soaring electricity prices, SASKO asked Bühler’s experts to help them lower energy consumption and increase throughput at their busy mill – with a minimum of downtime or expense.

By Janine Stephen  Photos by David Southwood

When SASKO modernized its Malmesbury mill in 2006, electricity was cheap. Just two years later, South Africa’s aging power grid reached its capacity. Rolling blackouts ensued and electricity prices soared: “Over the past five years, energy costs at our mills have more than doubled,” says Jabus Wessels, operations manager of SASKO. “Electricity has become a huge expense and a significant part of operational costs. We have to review efficiency at our plants.”

Some of SASKO’s mills were designed over 30 years ago, when energy efficiency was less of a concern; yet replacing machines was not an option for the company – and not just because of the cost. Milling in South Africa is hugely competitive: unlike their counterparts in other countries, most South African mills operate 24/7, with just one stop for routine maintenance.

After raising staff awareness about energy consumption, SASKO turned to Bühler Consulting to look at operational efficiency. The company believed that if Bühler could make significant energy savings at Malmesbury – the most advanced SASKO plant – even greater savings may be possible at the older plants.

A world of expertise

Senior milling technologist David Austin was part of the Bühler energy auditing team that visited the mill: “Because Bühler is a worldwide company, we can share best practice, knowledge and experience from around the world,” he says. Bühler’s experts also have hands-on experience in the milling industry – something the client insisted on. A team of technologists, energy experts and engineers also produced a Masterplan SoliX study, aimed at increasing throughput.
The results were dramatic: the mill’s energy consumption fell by 5.8 percent. “Plant capacity increased by 5 percent with the same extraction rate,” Austin says.

“Bühler’s whole SoliX programme aims to improve the operational efficiency of a plant.” Wessels adds. Energy savings were made at Malmesbury primarily by increasing the efficiency of the mill’s pneumatic system – responsible for transporting product and for dust extraction.

The team began by balancing pneumatic lines, before inserting pressure transducers into those lines to provide negative feedback signals to variable speed drives (VSDs). These regulate the speed of the electric motors driving the pneumatic fans. VSDs also offer the advantage of controlled start-ups, lowering maximum energy demand.

**SASKO, A DIVISION OF PIONEER FOODS, SOUTH AFRICA**

SASKO operates seven wheat mills in South Africa. It also has three maize mills, two rice and legume packing plants and a nationwide network of distribution points.

**Plant statistics:**

- **22 tons per hour** 24-hour operation
- **About 528 tons** of wheat is milled daily
- ** Produces 3 grades** of flour
- **60–80 employees**
Intelligent blow lines

Optimizing blow lines at the plant cut energy usage even more. In one case, a blow line carried bran some distance to a neighboring animal feed plant, but was also used to blow product just 50 meters to the packaging floor. By fitting sensors to the line’s diverter valves, the speed of the blower could be adjusted according to the destination of the bran. In other instances, energy-efficient elevators replaced blow lines altogether.

Bühler’s team further demonstrated their flour-milling expertise, when they suggested that mill throughput could be greatly improved with low-cost measures, like changes to the sieves and minor adjustments in the mill flow.

According to Wessels, energy consumption per ton of production (kWh/ton) is a major concern for energy managers: “We were very impressed that the promised 5 percent capacity-increase was obtained without significant investment in additional equipment or downtime,” he adds.

Additional savings

The results have led SASKO to commission SoliX Consulting Reports for its Port Elizabeth and Bethlehem mills.

The company is currently considering which measures to implement, but if it proceeds, both Austin and Wessels believe it will make even greater savings.

“We didn’t have to replace any equipment,” Wessels concludes. “We added VSDs and pressure sensors, but the rest was just a real knowledge of milling.”

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“We didn’t have to replace any equipment, it was just a real knowledge of milling.”

Jabus Wessels, operations manager at SASKO
Salalah Mills boasts the largest and most advanced flour mill in Oman.
On the same coastline made famous by frankincense, Salalah Mills Company has built a highly automated, state-of-the-art flour mill evolving to a mayor Milling Company in the Middle East. As it expands its markets, the plant depends on four Bühler milling lines that deliver a combined capacity of 1,500 tons a day.
On the southern coast of the Arabian Peninsula in Oman – not far from where gnarled frankincense trees grow, still producing the fragrant incense so prized across the ancient world – stands the Salalah Mills Company. Operating one of the largest and most advanced milling facilities in the Arab world, Salalah Mills features four state-of-the-art Bühler milling lines with a combined capacity of 1,500 tons of wheat a day.

These lines were custom designed, equipped and installed by Bühler, giving Salalah Mills the volume and flexibility to produce flour and semolina for a wide range of products, from commercial baking flour and pasta semolina to Harees and Jareesh, cracked wheat used in traditional Gulf Arab dishes. The highly automated, sanitary and reliable Bühler system not only means less maintenance and lower running costs, it also ensures that Salalah Mills consistently delivers the varieties and quality of flour required by its customers, both in Oman and around the region.

“Due to its consistent ability to supply top quality flour products, the Salalah Mills Company has been able to grow to cater to our customers’ requirements, and we have been able to establish a distribution-dealer network all over the country,” says Ahmed Alawi Al Dhahab, Chief Executive Officer of Salalah Mills.
From 300 to 1,500 tons
The mill launched in 1998 with a daily capacity of 300 tons. Since then it has added three more Bühler lines – the most recent of which came into service in May 2012. This most recent line is the mill’s largest-capacity line, able to process up to 600 tons of wheat a day, and established Salalah Mills as the largest flour mill in Oman. In addition to the four milling lines, Bühler has installed color-sorting machines that enhance the wheat cleaning process, as well as a wheat-pearling system to ensure maximum purity of the semolina.

Al Dhabab says that because the equipment is highly reliable, the mill keeps to its production schedules with no unexpected downtime. As a result, he is able to optimize plant operating efficiencies and consistently meet delivery schedules for customers. The reliability of the equipment is encouraged by Bühler’s ongoing support.

“Highly reliable equipment means we can consistently meet delivery schedules for customers.”
Ahmed Alawi Al Dhabab, CEO of Salalah Mills

Above: Effective production control is assured by the newest weigher from the popular Tubex range.
Below: Two combi cleaners and a scourer efficiently clean the raw product.
"Bühler is considered to be the world leader in the supply of flour production lines and is well known for its commitment to quality and after-sales services. Bühler is providing online technical support as and when required, apart from sending highly skilled personnel for on-site technical support," he says.

Looking ahead, Al Dhahab says the company is preparing to further increase its wheat storage capacity and to build a milling line exclusively for production of durum-semolina for export. The mill’s location in Salalah, an international transshipment hub, is “a major advantage, by offering easy proximity to tap export markets in Yemen and East Africa.” This region of Arabia has a long history of producing high-quality and valuable goods. With its commitment to excellence, as reflected in its quality management and choice of Bühler’s state-of-the-art equipment, and ambition to grow its operations to meet the evolving needs of an expanding customer base, Salalah Mills Company is continuing this proud legacy.

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

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SALALAH MILLS COMPANY (SAOG)

3 The number of years in a row that Salalah Mills Company has won the “His Majesty Sultan Qaboos Cup & Shield for Best Factories” award.

3 Number of ISO certifications earned by the mill: ISO 9001:2008 (Quality Management), ISO 22000:2005 (Food Safety Management) and ISO 14001:2004 (Environmental Management)

600 The daily capacity in tons of the company’s fourth and most recent milling line.

1000 The length in feet of the giant Panamax bulk cargo carriers that Salalah Mills has the capacity to offload using its own large bulk cargo offloading cranes at Salalah Port.

1998 The year Salalah Mills Company began operations with a 300 ton-per-day capacity.

2012 The year that Salalah Mills became the largest flour mill in Oman with a total daily capacity of 1,500 tons.

The Sortex Z+ optical sorter ensures a minimum loss of quality product during the sorting process.
MASTERS OF PASTA

Excellent pasta starts with high quality raw material and perfect dough. Bühler’s pasta presses Polymatik™ and Priomatik™ offer two paths to perfection for short and long pasta.

With over 100 years’ experience of making pasta presses, it’s hardly surprising that Bühler is the first choice for so many pasta manufacturers globally. Dough preparation is key when it comes to making good pasta, and the Bühler Polymatik™ press – with its flexibility and hygienic closed-system design – has established a reputation for delivering excellent results with durum or common wheat, corn or even gluten free raw materials. Thanks to its “first-in, first-out” principle, recipe changes are quick and hygienic. Regardless of the recipe or length of pasta, the Polymatik™ raises the bar in terms of pasta quality, color retention and cooking characteristics.

Another reason for choosing Bühler

For manufacturers favoring traditional techniques, Bühler decided to complement its pasta-making machinery range with the Priomatik™ pasta press. Launched at IPACK-IMA 2012 in Milan, the Priomatik™ combines state-of-the-art technology with a traditional trough mixer to create a press that is particularly suited to processing coarse semolina. Retention times are finely tuned for optimum hydration and longer dough development, resulting in perfect, optically homogeneous pasta. As with the Polymatik™, hygiene is no less of a consideration on the new machine. Thanks to easily accessible press components, the Priomatik is easy to both clean and maintain – ensuring that downtime is kept to a minimum and production lines stay as efficient as possible.

Siblings they may be, but there’s no rivalry. The Polymatik™ and Priomatik™ complement each other perfectly. Each machine has its own strengths and methods; the attributes they share are Bühler’s quality and reliability – and of course, a talent for producing excellent pasta.

Bühler has added the Seginus MPAS to its plansifter series. Thanks to its revolutionary magnet-based drive system, the new sifter requires 30 percent less space than the Sirius MPAk and – with an appreciably higher sifting capacity – the same space as the previous MPAR small sifter.

The sifter is a core element in the Bühler concept of The New Art of Milling. This machine sifts and grades break stocks, semolina and flours. The sifter can also be used for grading grain-like products or freeflowing granular materials.

Bühler has set a milestone with the rollout of its Sirius MPAK sifter. The Seginus MPAS expands the Bühler sifter series by yet another model. But the Seginus MPAS is not simply the “little brother” of the Sirius MPAK. With its revolutionary new drive system, the Seginus MPAS is a true innovation designed for numerous applications. It is excellently suited as a replacement of the previous MPAR and MPAQ small sifters in existing plants as well as for use in new plants for final sifting and final grading of all flours and granular products – from fine flour to spices.

The Seginus MPAS is distinguished by its compact design (footprint: 0.81 square meter) and its enormous throughput capacity. Compared with the Sirius MPAK and MPAQ, it takes up 30 percent less floor space. Compared to the MPAR small sifter, it achieves a 40 percent higher sifting capacity (sieve area: 5.6 square meters, 14 sieve frames per stack). Besides, the MPAS boasts all the benefits of the Sirius MPAK: sieve modules made of stainless steel, Novapur sieve frames in three different versions for top sanitation, variable gyration speed for hard-to-sift products.

The secret behind the compact design is the new drive. Instead of an electric motor with belt power transmission, a hubless magnetic drive powers the Seginus MPAS. This novel magnetic drive, which Bühler developed in collaboration with different partners, is integrated in the sifter bottom. The principle is quite straightforward: An eccentric mass equipped with magnets is made to rotate by means of a magnetic field so that a sieve acceleration as high as 3g is achieved. On the other hand, putting this simple principle to practice was not so easy: The design of the rotor was highly complex, as well as that of the control system. But the result is trend-setting: Eliminating the hub of the centrifugal weight trims 30 percent off the space requirement. The rotary speed can be continuously varied between 180 and 300 rpm. The motor does not need any maintenance, which reduces operating expenses. Elimination of the power transmission belt enhances food safety.

The Seginus MPAS sifter is initially available in a version with one drive and up to 14 sieve frames (sieve area: 5.6 square meters). But additional models are to follow soon, with several sifter compartments and drives – up to three sifter compartments with six drives and maximum 66 sieve frames.

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**SEGINUS**

Seginus is the traditional name of Gamma Boötis, a star in the constellation Boötes that represents the right-hand shoulder of the mythological figure Boötes. It is about 85 light-years away from the earth.

TAking rice processing to new levels

Bühler’s new R&D team for rice processing, located in Bangalore and headed by Satish Kumar Satyarthi, faced the challenges of developing high capacity machines that would work in all the diverse rice markets. On the way, the resourceful young engineers registered three new patents.

The vast majority of rice is produced and consumed in Asia, but tastes vary significantly by location, explains Sujit Pande, Bühler’s Bangalore-based global product manager for rice processing. Accustomed to the Indian market where people prefer aged long grain rice, he discovered that Thais like their rice with a silky and shiny appearance, the Japanese treasure the freshest short grain crop and in China, rice is mostly short grain and has to be sticky to cling to chopsticks.

The rice milling industry is just as diverse. Approximately 700 million tons of paddy is grown per year, 50 percent of this is processed in small capacity mills, 35 percent in mills with a capacity of up to 8 tons per hour and the remaining 15 percent in high capacity mills. There is a growing demand for higher capacity processing with a clear global trend upwards.

A Global Solution Made in India

It’s a competitive market. “If you don’t introduce the bigger capacity machines when the market needs them, you lose turnover and your customer base. The competition is at our heels,” says Sujit Pande. The Bangalore R&D team, recruited and formed only four years ago, was mostly new to rice processing. They designed and built the core machines of the rice processing line, whitener and polisher, suitable for worldwide high capacity rice milling with an open innovation approach. In discussions with key customers and their operators they learnt about important issues and collected data. Marketing and technology teams

GLOBAL RICE MARKET

90 % of rice paddy is grown in Asia – of which 30 % are grown in India, 30 % in China and 30 % in South East Asia (Thailand, Vietnam, Philippines)
10 % is grown in USA, Europe & Oceania

50 % low segment: rice processed in mills below 4 tons per hour capacity
30–40 % middle segment: rice processed in mills with 6–8 tons per hour capacity
10–15 % high segment: rice processed in high capacity mills with more than 12 tons per hour capacity
in Germany and China made strong suggestions and R&D followed up. The prototypes of the first two machines in the new Ultra line with a capacity of 12 to 16 tons per hour on different paddies were ready for trial after only two years. Whilst doubling the existing capacity and improving performance, the Bühler team had managed also to cut energy consumption by up to 40 percent.

UltraWhite™ and UltraPoly™ have now undergone six months trial on and off production lines in India, China and the Philippines. Adjustments have been made and in the case of the polisher, two different models resulted, one for the Chinese market and the other for the rest of the world. Now that Bühler has the highest capacity machines on the market, is the Bangalore team worried that the competition will catch up soon? Pande is optimistic. “Maintaining a leading position in the market is not just about capacity”, he explains. “It is also about saving energy, about performance and design innovations. This will give us an advantage.” One thing is certain: Bühler will continue to play a major role in the global rice industry.
NEW SOLUTIONS FOR THE LITHIUM-ION BATTERY MARKET

Bühler teams up in an exclusive cooperation with Osaka-based Primix, the Asian leader for mixing and dispersing technologies used for electrode slurries, to offer a comprehensive approach to the lithium-ion battery (LIB) market.

Many production steps lead to the assembly of the cell for a lithium-ion-battery. Bühler has been researching and optimizing the electrode slurry preparation process, offering not only machines and plants but also valuable know-how to Bühler customers. Following the cooperation with Primix, it is now ideally positioned to enable innovation in material and scale further downstream the LIB value chain, operating as the exclusive provider for LIB electrode slurry production plants for the European and North American markets.

The production cycle of electrode slurries might run like this: First, raw material and precursor material are ground using mainly the full-volume bead mill Centex™ and increasingly the Nano bead mill MicroMedia™. Slurry particles might verge on the scale of only a few microns requiring extremely sensitive precision milling. The challenge is to strike a balance between the required particle size and a low mechanical impact on the material. After an intermediary chemical treatment, Bühler technology steps in again for the milling of the active material to optimize the product.

From this process, the chemical industry yields dry powder. Battery manufacturers purchase this active material to produce electrode slurries. This is where Primix technology with the FILMIX™ mixing system can take over. FILMIX™-produced slurries have a dual advantage: They boast better charging and discharging qualities of the cells manufactured thereof as well as a longer battery life – and they can be made in larger quantities.

LIB technology is in high demand from the automotive industry to equip electric vehicles. With the FILMIX™ technology linked up to the Bühler process, significant gains in productivity is aimed, yielding electrode slurries in a quantity and at a cost that is interesting to automotive application. But also energy providers are looking towards LIB for innovative storage technology to render renewable energy like wind, photovoltaic and hydropower more stable.

Customers can rely on a successful track record: Bühler machines and plants have been operating in different contexts such as pigment production and various applications for the electronic industry. FILMIX™ technology has already been applied on an industrial scale for some years. However, customers will be able to conduct experiments and exchange know-how with the Bühler team at Uzwil in Switzerland, Vierheim in Germany, Mahwah in the United States, or Wuxi in China.
SERVICE MEETS INNOVATION

Bühler has always been synonymous with great customer service. It puts innovation at the heart of everything it does – customer service and aftercare are no exceptions. Product Manager Customer Service, Sylvia Woche, puts it best when she says, “Being a Bühler customer means much more than simply buying a machine.”

Bühler’s relationship with its customers has always been about more than sales. Tom Condron, Machine Operator at Syngenta’s Tuscola plant in the USA agrees. He calls customer service Bühler’s biggest asset: “The number one reason I would buy another Sortex is service and support,” he says. “The customer service representatives know me by name and I know they’ll take care of me.”

When it comes to taking care of customers, Bühler’s optical sorting and rice milling division isn’t satisfied with “good enough”. Great customer service is what counts, and the customer service team is always looking for innovative ways to provide it. For this, they believe there is no better source of inspiration than customer feedback – regardless of whether it comes from loyalty management surveys, or just a friendly chat.

Practical solutions

When customers said it would be convenient for them to have critical wear parts on-site, Bühler created multiple-component spares kits for Sortex and rice-processing machines. Likewise, when it heard that customers with changing circumstances wanted to upgrade machines, Bühler again found the answer in innovation: it created a range of retrofit upgrade kits for its rice-processing and optical sorting machines.

Upgrades for the TopHusk hullers include the Automatic Roll-pressure Control kit and the Rice Belt kit. The former automatically optimizes roll pressure to reduce heat build-up and maximizes the life of rolls and belts, at the same time eliminating the need for pressure readjustment during operation. The Rice Belt kit retools the tim-
ing belt to a specially developed hybrid belt which makes it insensitive to pulley misalignment; thus avoiding wear to pulley rims and improving the overall efficiency and service life of the machine.

Customers with Sortex optical sorters can choose from retrofit kits such as the IP5X-rated control cabinet, chute lift, feed enclosure and dust extraction, or for those with a Sortex Z+2 who want to increase capacity, a Z+3 upgrade is available.

Amir Rice Traders of Pakistan chose the Sortex Z+ retrofit upgrades for their Sortex Z3V machines. These include new software, display enhancements, long-life ejectors and GSM Modem connectivity. So pleased were Amir Rice Traders CEO Mian Waqar Aziz and Director Mian Amir Aziz with the results, they wrote a letter of thanks to Bühler, praising how the upgrades and Total Care “not only enhance our machines’ performance, but also our continued after-sales service relationship.”

Total Care
Total Care was developed to help customers get even more from their optical sorters. With contracts from one to five years and a choice of options – including training, maintenance or repair visits – packages are tailored to suit each customer. Sorter performance can even be monitored remotely with “Anyware”, ensuring that issues are identified before they become a problem.

Bühler’s optical sorting and rice-milling division is soon to enhance its customer relationships even more, when it opens a new state-of-the art customer center in London. Offering training, product trials and demonstrations to customers, the center officially opens its doors in early 2013. When it does, no doubt customer service will be on hand, listening out for ideas – one might just be the inspiration for their next innovation!

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MORE DEMAND FOR DEDUSTING

Dust aspiration has gained in importance for the grain handling industry. Direct results are better service life, increased emission control and higher product quality.

In the reception and storage of grain or bulk material, in grinding or processing particles, one thing is common: you will produce dust. Not only is dust harmful to manufacturing machines, it might also compromise food quality and sanitation standards – and dust mixed with air can explode. This makes dedusting a first imperative of work safety and quality control.

Bühler offers a comprehensive dust control system with its round filters, the spot filters and the filters and dedusting panels for receiving pits, to ensure that grit and dust are removed at every step of the production chain. The technology is based on negative pressure that sucks fine particles through a filter. Round filters are particularly suited for reception and storage plants. Spot filters are designed for the installation on elevators, belt and chain conveyors. Central aspiration panels remove dust from receiving pits while peripheral pit filters return the dust to the product, thus avoiding product shrinkage.

“WE HAVE TO MEET TOUGHER GUIDELINES”

diagram spoke with Andreas Rembeck, Sales Manager Dedusting Technology, Beilngries.

Mr. Rembeck, your unit is based in Grain Logistics. Where do you see further potential for dedusting systems?
We can transfer our long-standing expertise from grain to practically any industry sector that handles particles, for instance the feed and biomass industry. We’ve also had excellent results with our round filters in waste separation and recycling industry to which the equipment was sold by a commercial partner. The potential is huge.

What are the big trends in dust aspiration?
We see an increasing demand for dedusting in general, for two reasons. Requirements to reduce the dust emissions contained in exhaust air are getting tougher. Today, many countries and companies demand a maximum mass concentration of 20 mg/m³ or even lower. Cyclones cannot fulfill these constraints and are being replaced by bag filters. A second factor is the focus on plant safety. Bühler’s central, spot and intake pit dedusting solutions are designed to even undercut regulations as well as to fulfill all requirements of explosion protection set down in the ATEX guidelines.

Can customers get a hands-on demonstration of Bühler dedusting machines?
Of course! We have a customer service training center in Beilngries, specialized in Grain Logistics equipment and solutions. Here, our customers will also profit from Bühler’s dedication to know-how transfer.

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PERFECT MOISTURE BALANCE

The automatic moisture control unit for grain helps the milling industry maintain consistent grain moisture.

For a mill to operate efficiently, grain must have a consistent moisture level. Fluctuating moisture levels in the grinding process make it harder to operate consistently and produce high-quality flour. Bühler’s new Automatic Moisture Control Unit for grain enables mills to operate more efficiently with its precision measurement capabilities.

Using latest microwave technology applied on line during the production stream, the system precisely measures the moisture content of grain on a constant basis. It then sends the captured data to the control unit which compares it to the moisture level set point defined by the operator. Finally, the system calculates the exact amount of water that must be added to ensure consistent grain humidity.

The Automatic Moisture Control Unit, which meets the food safety standards of the milling industry, features an optimized product inlet with material guidance. This high-precision measurement equipment designed for utmost accuracy and reliability is easy to maintain and operate. What’s more, it helps milling companies boost their efficiency by achieving consistent levels of grain moisture throughout the production line.
Bühler wants to strengthen its customer service worldwide. In Brazil, for example, six new regional clusters have been established in proximity to Bühler’s customers to offer local support, analysis, consultation and training. The units are staffed with a service manager and a highly skilled technical team who will frequently visit customers. Their aim is to optimize distribution logistics, help with product innovation and to create value for Bühler customers.

“Among the advantages for the customer are a more personalized and rapid attendance, greater dedication from our professionals and at the same time the development of services in accordance with local needs,” explains Damien Chapelier, Head of South American Customer Services. The same approach holds true for Bühler worldwide.

**THE BRAZILIAN SERVICE CLUSTERS IN FOCUS**

**Rondonópolis**
The unit is located in the central part of Brazil. Its main focus lies in the manufacture of feed and oil. Bühler offers roller service, i.e. fluting and regrinding rolls, and regrinding flaker rolls at customer plants, a monthly service.

**São Paulo**
The São Paulo unit offers mechanical and electrical maintenance, troubleshooting remote or at the plant, consulting and plant doctor visits. The industry focus in this region lies on the production of chocolate, paint, wheat milling, breweries and malt houses.

**Recife**
This unit will start in 2013 to offer grinding and fluting service for wheat and maize milling industries as well as sand blasting. Mechanical and electrical maintenance will also be available for our local customers. Some wear and spare parts will be available on stock.

**Porto Alegre**
Located on the south end of Brazil, this service station offers grinding and fluting service for wheat, maize and oil milling industries, sand blasting as well as mechanical and electrical maintenance. Some wear and spare parts will also be on stock.

**Cascavel**
The service station will start in 2013 with die refurbishing service for local customers and customers in neighboring Paraguay. Service like mechanical and electrical maintenance will also be available. The main activities concentrate on feed mills and flour mills.

**Joinville**
Supported by a fabrication plant, this service station is specialized on revision and retrofit for Bühler and non-Bühler machines for all divisions. Service for fluting and grinding is also available as well as mechanical and electrical maintenance. A large wear and spare parts stock is also located in Joinville.
NEW SKILLS FOR A NEW YEAR

Whether you choose to train at your own production facility or at one of Bühler’s well-equipped training centers, there is a wide selection of courses to choose from. Here are a couple of suggestions.

From molten aluminum to the finished steering wheel

In “Setup Dataspread and Datanet,” a four-day training event that is held in the Die Casting Tech Center in Uzwil, attendees learn how to get the most out of their die casting machines. The course imparts a solid understanding of the shot parameters, the P/Q diagram during casting, and the heat balance of the die. In hands-on casting tests, participants try out how the casting temperature impacts the quality of the components produced, how the casting process can be fine-tuned, and how simple process and machine trouble can be identified and resolved.

You will find more information on the course at www.buhlergroup.com/setup-dataspeed-and-datanet

Course dates: dates for 2013 will be published online shortly

Target group: casters, plus machine and shift managers with initial experience in aluminum die casting

Small, smaller, nano

In the first part of this modular training course on dispersion and wet-grinding technology, attendees will deal with the process engineering basics and be given an insight into the size reduction of particles and agglomerates. In the second part, the “Handling and Operation” module, participants will perform and evaluate their own grinding tests mentored by Bühler specialists. As an alternative, they can familiarize themselves with control technology in the “Maintenance” module and learn the most important maintenance jobs. Attendees who complete the course will not only know how to identify irregularities in operation and their causes, they will also be able to carry out minor repairs independently and devise preventive measures.

You will find the detailed course programs at www.buhlergroup.com/training-courses-grinding-dispersion

Course dates: 26–28 February and 5–7 March 2013

Target group: operators and maintenance personnel

For the complete range of courses offered by all units, please visit: www.buhlergroup.com/training-courses