Focus: Manufacturing

Buhler International: Central America

Emergency: Seized up
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Dear Readers

The main subject of this issue is Manufacturing. Buhler’s global network ensures that you can start on-schedule, top-quality production at your site with the equipment, processes, and systems developed by our engineers and marketed by our field sales staff. This network includes not only our 16 production sites around the world, but also coordination of more than 5000 vendors and our sophisticated supply chain. We are committed to manufacturing our own products. This helps us maintain our flexibility and ensures a high level of supply readiness. In addition, it enables us to guarantee a high quality standard, which is our Group’s hallmark today. But making our products ourselves also allows our engineers to create production-compliant machine designs. These are all advantages that you would never want to miss.

I wish you much pleasure reading this issue!

Calvin Grieder, CEO
Smoothly meshing wheels

As elsewhere, a classical division of labor also exists in the Buhler organization. Sales staff and engineers team up to develop projects together with customers. Then the Manufacturing and Logistics specialists ensure that the plants ordered can go on stream on schedule and in compliance with the rigorous quality standards that have been defined. In order to enable this demanding service to be provided, Buhler operates a global supply chain. Member of Group Management Hans Peter Kunz in his capacity as head of the Manufacturing & Logistics division is responsible for ensuring that this chain works smoothly.

Buhler is present with 40 companies, additional sales offices, and numerous agencies in about 140 countries around the world. These sales organizations are grouped in eleven regional platforms, which – beside sales and service – also fulfill additional functions such as engineering, production, and logistics. This global network is a major success factor for Buhler and enables the Group to provide a tailor-made range of services close to customers’ sites.

Local manufacturing and logistics services
Costs, time, and quality have always been the crucial criteria for success in the fields of manufacturing and logistics. But globalization of markets and utilization of information technology have shifted the weights. Thus, customers continuously expect more value for a given cost of a service. Minimizing the span of time from ordering to shipping has become a decisive competitive factor. Both customers and Buhler today take a high quality standard as granted. Whereas production used to be concentrated in just a few centralized factories, Buhler has now turned to the principle of developing markets through regional manufacturing facilities or suppliers. Decentralized order processing allows customer needs to be fulfilled without any detours in the respective regions and reduces the delivery times. At the same time, this is a precondition for providing services at optimized cost by exploiting cost advantages while minimizing the shipping costs.

A logistic feat
Processing such a large number of customer projects as Buhler does requires an extensive logistics network, which is called the Buhler Supply Chain. It includes the services of 16 factories, 5000 vendors, and 40,000 shipments, which must all be coordinated. The top priority in all this is to ensure that customers can expect on-schedule start-up of the plants they have ordered.

For each plant ordered, an average of about 5000 individual components or 500 tons of material must be available in the right place and at the right time. This major organizational and logistic task is the responsibility of the Buhler Supply Chain Management. The project orders are handled through regional supply platforms, which are responsible for on-schedule supply of the products in the respective regions. The products are manufactured either by Buhler factories or by vendors. In the years 2005 and 2006, platforms were established in South America, North America, South Africa, China, and Europe. The Southeast Asia supply platform followed in 2007.

Transportation systems are crucial in this supply system. The entire shipping logistics are handled in collaboration with the international forwarding specialist Panalpina, which has its own office at the headquarters of Buhler in Uzwil. Each year, it handles some 40,000 shipments with a total weight of 40,000 tons, 80 percent of them containerized and transported by rail and by sea.

The Manufacturing & Logistics management team: (from left to right) Guido Meier, Walter Kuhn, Albrecht Hänel, Hans Peter Kunz.
Buhler “Total Synchro”

Buhler made a significant stride forward in improving quality awareness when it launched the “Total Synchro” project. This concept ensures that all the services provided to customers will mesh smoothly. From the receipt of an order to commissioning of the plant supplied, all the processes are carefully matched – synchronized – to ensure that the schedule and organization targets mentioned are made possible. This covers not only in-house processes – “Buhler Total Synchro” also involves all suppliers and other partners. The success of this program is reflected in minimized inventories, shorter cycle times, and higher productivity.

Implementation of Buhler Total Synchro – that is, continuous flow-line production – also requires that products be designed in a way that will allow flow-line assembly. This allocation results in much tighter links and therefore in a clear assignment of responsibilities. Buhler Total Synchro is a demanding paradigm shift. But the high level of commitment of everyone involved in the project has generated a powerful inherent dynamism so that nothing stands in the way of continuing successful development.

Supply management

With an annual procurement volume totaling over 700 million Swiss francs, supply management is highly significant. The direct or indirect guidance of the roughly 5000 vendors that supply goods to the Buhler Group requires clear targets in process design. Clear-cut rules on supplier selection, performance measurement and rating, and continuous employee training are the most important elements in the design of the supply management system. The soundness of the approach that Buhler has taken in designing its worldwide supply management system is borne out by an award received from the Fraunhofer Institute.
Value-generating structure

Make or buy – that is a question to which every company finds its own specific answer. Some companies make almost nothing themselves, whereas others manufacture almost all their own products. Both types of businesses can be successful. Decisions are usually made on the basis of general criteria – costs, time, and quality –, which are clearly defined for every particular case. If, for example, it is significantly cheaper to produce a given component in-house than to buy it from an outside supplier, making instead of buying it will be justified. If not, buying must be considered as an option. But at any rate, the protection of a company’s know-how will always take precedence. With 16 manufacturing sites, another question is how much capital is allowed to be absorbed by investments in the factories. Even a one-time purchase will initiate a process of technology renewal, since systems must be replaced every six to ten years. Buhler assumes that in-house production will gradually decline at different rates that depend on the specific region. Buhler customers, however, will not feel any impact of this decision. Whether the decision is made to make or to buy – Buhler always strives to supply quality in the right place and at the right time through its regional supply platforms. (ca)

“Mister Manufacturing”

When Hans Peter Kunz retires next year, he will leave behind a sophisticated supply chain. In the seven years during which he has headed the Buhler Manufacturing & Logistics division, Buhler’s “Mister Manufacturing” Hans Peter Kunz reorganized the entire area of manufacturing, procurement, and supply management. In this, he pursued three goals: to fine-tune the production process, to increase productivity, and to cut costs. (bos)
When it comes to researching production techniques and defining the laws of production mechanisms, the technical university “Rheinisch-Westfälische Technische Hochschule” and the Fraunhofer Institute for Production Technology IPT in Aachen are considered as “first names.” Professor Dr. Günther Schuh holds leading positions in both research institutes.

Professor Schuh, your institute is a leader in the research of industrial production and the organization of industrial companies. How would you describe your research efforts to a non-specialist?

Günther Schuh: Progress in industrial manufacturing cannot be made on the basis of research in the ivory tower. What is needed is a continuous discourse with industrial practice. Therefore, we focus our research efforts on subjects relevant to practice. We do this through a blend of basic and consortial research projects involving industry in combination with direct contract research for and consulting of industry. In Aachen, we conduct this research with the Machine Tool Laboratory WZL and the Fraunhofer Institute for Production Technology IPT. Here, we conduct research with about 900 scientific and non-scientific staff on the equipment, processes, and operations that will significantly impact the everyday activities of manufacturing companies in the coming years.

Industrial production is expected to create ever-better products at ever-lower cost. Is that an attempt to square the circle?

Günther Schuh: Especially companies from high-wage countries are coming under pressure in the global competitive environment from providers based in low-cost countries. Our response is often to relocate our manufacturing volumes to such countries. But our high-wage companies must not yield to such competitive pressures; they must proactively shape the competitive arena. This is the only way to secure the long-term existence of western production sites and to improve their freedom of action in competing.

Is there any manufacturing secret?

Günther Schuh: The manufacturing secret is to solve the mismatch between manufacturing specific products or producing individual solutions at commodity prices while minimizing planning requirements.

Do any major industrial companies exist yet which come close to this ideal?

Günther Schuh: Yes, I am thinking of the sports gear producer Nike or companies such as SEW Eurodrive. By taking an outstanding platform management approach, they have largely achieved a production system oriented toward mass customization. It used to be that as a customer you were offered ten or twenty types of sports shoes, which were displayed on store shelves and aroused more or less interest in buyers. Today, customers can visit the Internet and choose from among hundreds of possible combinations without having to pay any significant premium for this flexibility. Companies provide this flexibility to today’s buyers essentially at no extra charge. This is an outstanding platform concept.

Can “ideal production” be achieved in the first place? Or is the “ideal” subject to continuous development?

Günther Schuh: When you look at the historical development of industrial production, you will of course find that the general road map of modern production is changing continuously. Therefore, the theories of today will be corrected in a few decades by new ideals or even be completely replaced. But you will also find that many theories have survived and are still valid.
I have already mentioned the production situation in high-wage countries. Their competition with low-wage countries typically takes place in two contradictory fields: planning and production efficiency. With regard to production efficiency, low-wage countries have up to now primarily focused on economies of scale. On the other hand, high-wage countries must necessarily position themselves somewhere between economies of scale and economies of scope. In the second dimension, that of planning efficiency, producers from high-wage countries are attempting to continuously fine-tune processes on the basis of sophisticated, capital-intensive planning instruments and production systems. On the other hand, manufacturers in low-wage countries consider the solution to be straightforward, robust process chains oriented toward value streams. In order to achieve a sustainable competitive advantage for production sites in high-wage countries, it will no longer suffice for producers to improve their position within the two spheres. I am convinced that the key to strengthening the competitiveness of companies in high-wage countries is to reconcile these dichotomies to the greatest extent possible. We are currently pursuing research on this ideal in Aachen with our “Integrative Production Technology for High-Wage Countries” excellence cluster within the framework of the German Excellence Initiative. And companies will also face these challenges in the coming years and decades.

What about collaboration of your institute and industry in practice? Günther Schuh: Many companies in Germany know our combined production engineering institute in Aachen and are familiar with our research and consulting profile. Manufacturers can approach us with almost all challenges that they encounter in their value-adding activities as well as their procurement management. We often pick the project team members across the boundaries of individual institutes and departments, depending on the expertise required in a specific case. The two institutes have a scientific staff of almost 200 in the area of industrial production. Needless to say that this immense think tank benefits our partners in industry because they can be certain that we will always base our advice on the latest scientific findings. On the other hand, the closeness of the institutes to industry also contributes greatly to the quality of our research. Research must never
be an end in itself, but always have practical relevance. In the strategic orientation of our research programs, we therefore always keep an eye on the concerns of industry and utilize long-term contacts in this connection.

You yourself have set up and built a company. To what extent does this experience help you understand the concerns and needs of the business community?

Günther Schuh: I think that especially in the expert field of production management, a professor will be well advised to occasionally check his scientific findings against practice. And, indeed, my company offers me exactly this possibility.

The division of labor is increasing steadily in the global economy. “Make or buy?” is the key question. Does anything such as an “optimal share” of a company’s in-house production exist?

Günther Schuh: Of course, a theoretically exact optimum exists for the scope of value generation in every company. However, it is all but impossible in reality to determine this point, for example by marginal cost models. In addition, this optimum is volatile, since it depends on dynamic influencing factors such as the competitive structure or technological change. This means that ultimately the only thing that companies can take as a rule is the principle of the division of labor stipulated by Adam Smith, which says that everyone should do what they do best. Therefore, companies should focus on in-house value generation in areas where they can differentiate themselves from competitors to a particular degree while rejecting others. But this approach will only work as long as companies do not get caught in critical dependencies. Otherwise, they will face asymmetric power positions and increased supply risks and transaction costs. These will make outsourcing uneconomic again. Therefore, when companies contemplate outsourcing as an option, they must always consider both sides of the coin. It is no coincidence that the outsourcing trend of the past years and decades has appreciably waned and in some cases even been corrected by companies.

Along with the division of labor, purchasing is being transformed from simple ordering to a strategic corporate function. What trends can you observe in this respect?

Günther Schuh: Today, purchasing is in a much stronger position than in the past to contribute genuinely to value generation in companies. Long-term partnerships with high-performance suppliers are a value in themselves for manufacturing companies. The function of purchasing is to continuously enhance this contribution to value by operating its two control levers: On the one hand, procurement costs continue to be the benchmark against which purchasers must primarily be measured. But cost reductions must not be achieved solely through purchasers’ negotiating skills and the use of asymmetric power relationships. Instead, methods must be found together with suppliers to cut product costs for the benefit of both parties. Value orientation in this connection means to jointly define the price-to-performance ratio of a product through value analysis and to continuously improve it. Moreover, if the goal is to take advantage of global cost potentials by building a worldwide sourcing network, care must be exercised. Low-wage countries are not necessarily the most cost-effective procurement source. Global purchasing requires a sound evaluation of the total cost of ownership. The second control lever of purchasers resides in the actual value of the products they buy. The function of purchasers is not only to assure product quality and availability, but also to integrate outside innovations. Acting as they do as a primary interface with the sourcing market, it is the purchasers’ duty to keep an eye on the technological potential of this market and to involve high-performance suppliers in the company’s own development processes. Innovation management thus becomes a core function of purchasers.

Your institute distinguished Bühler AG and four other companies with the “Successful Practice in Purchasing 2007” award within the
framework of a Europe-wide benchmarking project. What made your institute feel that Buhler deserved this honor?

Günther Schuh: The Buhler purchasing department changed from a pure ordering organization to a strategic corporate function a few years ago. Today, it can be considered as a reference in the plant and equipment supply sector in terms of its supplier base management. Buhler with its limited resources has succeeded in focusing on the essential purchasing functions: selecting and developing high-performance suppliers and involving them at an early stage in its own research and development efforts. Buhler has achieved this on the one hand with efficient processes and tools, but also through its employees’ high qualifications. Today, Buhler employs highly capable procurement engineers who fulfill the interface function between purchasing, development, and suppliers. The future in purchasing belongs exactly to such role players.

Interview: Herbert Bosshart

Günther Schuh

Prof. Dr.-Ing. Dipl.-Wirt. Ing. Günther Schuh was born in Cologne, Germany, in 1958. From 1978 through 1985, he studied mechanical engineering and business administration at the RWTH Technical University in Aachen. He obtained his PhD in 1988 after acting as an assistant at the WZL for Professor Eversheim, where he was head engineer up to 1990. From 1990 onward, he was a full-time lecturer for manufacturing and industrial operations science at the University of St.Gallen (HSG). In 1993, he was appointed professor for business administrative production management at the HSG. Prof. Schuh followed Professor Eversheim in September 2002 to the chair for production systems at the RWTH Aachen and the directorate of the WZL and Fraunhofer IPT in Aachen. Since 2004, he has been director of the Research Institute for Rationalization at the RWTH in Aachen. (pd.)
The fundamental modernization of the Buhler Group initiated a few years ago does not stop at the factory gates. “In the framework of the Buhler Synchro project, the 17 production sites spread across the world are undergoing some profound changes,” explains Guido Meier, who has been in charge for the main manufacturing site in Uzwil since April 2008. With Synchro, all the processes from order reception to commissioning are coordinated so that all waste of resources such as excessive cycle times, surplus output, or bloated inventories are eliminated.

Guido Meier, who has headed Manufacturing in Switzerland since April 2008.

The Buhler corporate factory in Uzwil will be changed into a profit center by the year 2009. As an autonomous production unit, it will also accept third-party business, but services for Buhler customers will clearly take precedence.

In the market for the market
Reflecting the global orientation of the Buhler sales network, the organization of the manufacturing sites is based on the philosophy of closeness to the marketplace. Buhler operates a total of twelve production plants in North America, South Africa, India, Iran, Germany, and China, which are active either geographically for a certain region or for a given industrial sector. These factories report directly to the individual divisions – Grain Processing, Engineered Products, Sales & Service, and Die Casting. Unlike these regional or product-based factories, the three corporate manufacturing locations in Uzwil (Switzerland), Braunschweig (Germany), and Wuxi (China) supply their goods to all parts of the world and for all the Buhler business units. Over the past three years, Buhler has spent over 100 million Swiss francs on updating its four corporate production sites.

New production unit
Buhler is being rebuilt step by step, the goal always being to offer customers around the world the best possible solutions. For the centralized corporate factories, the focus is on creating a profit center. Since the start of April 2008, Guido Meier has been in charge of this rebuild. He is 45 years old, has been with Buhler since 1998, and headed the Buhler affiliate in Johannesburg for several years. “My team has been assigned the mission of redesigning the key factory of the Buhler Group into a business that is accountable for its result.” On the basis of the corporate manufacturing site in Uzwil, also the factories in Braunschweig and Wuxi are to control their production activities autonomously and be held accountable for their commercial result.
Room for their own activities

The factory in Uzwil is sized for maximum 1,050,000 production hours annually. “As a result of the gradual decline in the depth of manufacturing and our constant efforts to increase productivity, our capacity utilization has been diminishing in small steps since 2004,” explains Guido Meier. “In the year 2007, we still had an output of 950,000 hours. As the freedom of our business units increases to have certain components manufactured by third parties, and as certain products are outsourced to the other factories, our in-house capacity utilization will further decline up to the year 2015. This gives us room for developing our own activities.” With this, Meier is referring to the possibility of developing new products or taking the initiative with existing ones and selling them to customers at going market prices. It is Meier’s declared goal to strengthen and expand the Buhler factory in Uzwil over the next few years and to maintain it as a training site for Buhler apprentices.

Measures initiated

The processes have been redesigned with the aim of allowing flexible responses to customer requirements and streamlining them to the farthest possible extent. Buhler customers can thereby also benefit from shorter cycle times. Guido Meier: “We have fundamentally revised the manufacturing principle here in Uzwil and switched to the Buhler Synchro approach.” With the third-party business in mind, funds were also invested in new technologies. Guido Meier: “We have selectively expanded our core capabilities.” For example, a new surface treatment system will be installed in Uzwil in the autumn of 2008. The surface coating of die casting bars will from now on be done with a laser coating system. In addition, the credit for a new metal sheet and plate concept has been approved. Another item on the agenda is the comprehensive renewal of the building structures.

Building the third-party business

But before the profit center reaches its desirable level of autonomy and thus its required profitability, a number of projects still await completion. “In order to build the third-party business, we must set up our own sales organization and create the necessary engineering capacities,” says Guido Meier. He is confident that the third-party business will develop satisfactorily. “We have already established numerous contacts with prospective third-party customers, some of which wish to entrust us with production jobs – up to the point of manufacturing entire machines and systems.”

The Buhler fish

Attentive visitors touring the Buhler production facilities in Uzwil will discover posters everywhere showing large, stylized fish. Guido Meier, head of Manufacturing in Switzerland, explains: “The fish symbolizes our pull principle. The customer pulls the fishing hook in the mouth of our fish and thus determines the point of time of delivery. The fish bones stand for the components and services that the departments involved must supply to the right location at the right point of time. The fish posters thus always show the current status of an order.” (bos)
Change of mentality required

The rebuilding of the corporate manufacturing site in Uzwil requires a new way of thinking. “Without changing our mentality to a certain extent, we will not be successful,” says Guido Meier. “In the future, we will have to step up our efforts to generate business and win contracts, also from our own business units. Focusing on customers will be more important than ever. This will not be easy, but I am confident that we will manage to change as a team. At any rate, the entire rebuild has gotten off to a very good start. We will have completed it by 2009.” The corporate production site in Uzwil is on track to change from a cost center into a profit center. (bos)
The purchaser’s new role

As the depth of manufacturing of a company declines, the importance of a well-organized, efficient, and cost-cutting purchasing organization increases. The Buhler purchasing staff have implemented this insight in their procurement concept to an outstanding degree, a fact borne out by an award they received from the Fraunhofer Institute for Production Technology, IPT.

In the context of a Europe-wide benchmarking project, the Buhler Group was selected together with four other companies as winner of the “Successful Practice in Purchasing 2007” award.

Albrecht Hänel, who in his capacity as Head Corporate Supply Management is in charge of designing and creating today’s purchasing organization, explains to what extent this has proved its worth also in practice: “Here at Buhler, we are not the world purchasing champions. But we have made very much headway in the development of the entire process chain, from the order office to added-value-oriented supply management.”

Supply management vision

When he started his job, Albrecht Hänel set himself the goal of developing and building a global sourcing network together with his team. The idea behind this was to make a significant contribution to the growth and commercial success of Buhler and thus to create a competitive edge for the Group. He did this bearing in mind that the financial leverage in procurement is much higher than in sales. The most important measure taken in connection with the new Buhler Supply Management system was to centralize the entire procurement network, as well as supplier rating and relationship management. Procurement engineers act as the interface between the suppliers and the in-house development staff.

Controlled out of Uzwil

Buhler currently has over 5000 vendors around the world – in Europe, Africa, Asia, North America, and Latin America. Local purchasing offices control the local procurement activities on an essentially autonomous basis. The key link of the global sourcing organization is the so-called Corporate Supply Management (CSM) at headquarters in Uzwil. From here, the global procurement organization is managed in technical matters and the corporate procurement strategy is defined. The local purchasing offices execute the strategic targets defined by CSM and carry out operating procurement in the individual countries. An in-house controlling and development system ensures compliance with the corporate targets: Each purchasing office around the world is assigned a CSM staff member. This person carries out regular coaching sessions and supports his specific purchasing office in case of concrete procurement questions. Once a year, the relevant purchasing office is audited. A relationship based on trust has gradually been built between the local purchasing organizations and the CSM staff through regular contacts, intensive communications,
and day-to-day business as well as long-term projects. The responsibilities and the division of labor is clearly defined, and the purchasing offices feel that they are being supported by the central organization in their daily activities.

**Supplier ratings**

Over the past six years, Buhler appreciably reduced the number of its suppliers. At present, Buhler cooperates with some 5000 large and small vendors. It is neither possible nor meaningful to measure all suppliers against the same standards. Instead, Buhler divides its suppliers into three classes, to which different forms of rating are assigned.

Approved Suppliers are vendors of simple components where the focus is on efficient handling of purchasing processes. Supplier care is minimized and handled by the operating purchasing staff. In connection with Approved Suppliers, Buhler limits itself to the suppliers’ own information on themselves as a basis for rating them.

With Preferred Suppliers, the aim is to continuously optimize supply performance and procurement costs. As a rule, only a small number of second sources exist for Preferred Suppliers. Rating is based both on the suppliers’ own information and on external ratings as well as on key figures obtained specifically from SAP and a businessware database. These allow tracking of the development of a vendor’s supply compliance, costs, and quality.

**Top vendors**

Key Suppliers are vendors where the goal is to achieve close and long-term collaboration. These are often single sources. They typically act as system partners in integrated projects in the fields of development, manufacturing, and logistics. This type of cooperation...
Manufacturing

is characterized by mutual knowledge of processes and structures and an intensive exchange of information. Therefore Buhler relies on an extensive set of rating instruments for its current 300-odd Key Suppliers, consisting of risk-grid analyses, regular local supplier audits, and a rating on the basis of the so-called TQRDCE model (see box).

The risk-grid analysis is also based on a multi-dimensional approach. In contrast to purely financial risk evaluations, Buhler defines four risk classes (technology, finances, supply reliability, and contracts) with relevant risk indicators in order to obtain an integral rating of the procurement risks associated with suppliers.

The 300 Key Suppliers are rated once annually, which produces a high workload on the Buhler purchasing department with its limited capacities. But the effort pays off: Buhler demands its Key Suppliers to achieve 80% out of the maximum 100% TQRDCE points. Since the introduction of the TQRDCE rating model four years ago, the performance of these 300 top vendors was increased on average by 8 to 10%. Today’s average is 83%.

**Finding outside innovations**

Along with the objectives, also the requirement profile of the Buhler “purchasers” has changed. Today, the Corporate Supply Management department is staffed primarily by two types of purchasers: business administrators with an understanding of engineering issues and acting as commodity managers, and engineers with additional training in business administration acting as so-called procurement engineers.

The most important task of a procurement engineer is to incorporate suppliers’ technological know-how and innovations in Buhler’s own development process and also to transfer them to other business units within the Buhler organization. The procurement engineers are the initiators and driving forces in development partnerships between Buhler and certain Key Suppliers. Another function of the procurement engineers is to ensure that new product designs fulfill the procurement requirements. They are thus responsible for coordination between suppliers and development engineers.

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**TQRDCE**

TQRDCE originated in the U.S. and stands for Technology, Quality, Responsiveness, Dependability, Costs, and Environment. Buhler has defined success criteria for each of these six dimensions. They serve not only for rating current supplier performance, but also for appraising the long-term potential of suppliers. For example, the problem-solving capabilities of a supplier are one of the success criteria for the Technology dimension. Another criterion for the Costs dimension apart from the actual product costs is the supplier’s preparedness and capability to show his cost structures in a transparent way. In the annual TQRDCE evaluation, the individual success criteria are discussed together with the supplier. The final rating result is then openly communicated to the supplier both at the dimension and at the individual criteria levels in order to jointly define measures for improvement and targets.

Albrecht Hänel, Head Corporate Supply Management.
Everything running smoothly again ...

The chocolate refiners of Buhler are very much like the legendary Volkswagen “Beetle” – they just keep on running and running. When their control systems become obsolete over the years and have to be replaced by new ones, and when one or the other retrofit program is implemented, the refiners will continue to run as if they were brand new. This was recently demonstrated at the Chocolat Frey company in Switzerland.

Buhler refiners have an above-average life expectancy. In order to achieve a maximum uptime of these tried and true chocolate refiners in the long term, the Buhler Chocolate & Cocoa business unit is now offering a replacement for obsolete ERD and ERE controllers, for which some components are no longer available: the new FineControl-E refiner control system. But this new control system for two-roll and five-roll chocolate refiners does more than just replace the old system. Equipped with the powerful newest-generation Siemens PLC (programmable logic controller), it automatically controls and monitors all the relevant process parameters and displays them on an easy-to-use touch display. FineControl offers additional options for selecting settings, making checks, and performing diagnostics which further optimize the refining process and increase its robustness.

Chocolat Frey – the chocolate factory owned by Switzerland’s largest retailing chain – has relied for years on Buhler production systems. The managers at Chocolat Frey decided to implement a number of projects
The completely overhauled refiner lines 5 and 6 of Chocolat Frey in Buchs.

designed to systematically upgrade all the company’s machine control systems. Thus, the Buhler retrofit specialists step by step upgraded the entire range of equipment of the refining lines to a state-of-the-art level over the past two years. In addition, they carried out a number of different retrofits. The purpose of the entire package of measures was on the one hand to ensure the availability of the equipment and to reduce spare parts inventories over the next three years. On the other hand, it allows the refining process to be fine-tuned by improving the setting options.

**Two production lines**

As the last upgrade project, the production lines 5 and 6 were completely updated. The two tandem production lines are made up of an SZAЕ two-roll refiner serving as a pre-refiner, six SFLE refiners, and two SFL five-roll refiners. On all nine machines, the ERD control systems were replaced by PLC control systems and retrofitted with new operator terminals. In order to enable the control system to be converted, the potentiometer-based gate angle detection system of the SZAЕ and SFLE refiners was replaced. The new solution, which is based on an eccentric plate and a proximity switch, ensures reliable, accurate, and non-contacting detection of the gate opening angle. In addition, the key-operated switch for the gates was rebuilt in order to increase its operating reliability. Finally, the dry-running protection system of the SFLE and SFL refiners was changed to the new FineLux system. Other retrofit measures concerned only the two SFL refiners, which were still equipped with relay-based control systems and had
to be prepared for the new PLC control systems. This also required the rebuilding of the mechanical system. The hydraulic components were adjusted, the mechanical roll gap adjustment system was renewed, and the knife pressing mechanism was converted from hydraulic to pneumatic.

**Minimized downtime**
The two production lines 5 and 6 in place at Chocolat Frey are highly automated and intensively used. Converting their control system was therefore a special challenge. Thus, the interfaces with the process control system had to be precisely adjusted. The new control system was also to be quickly accepted by the line operators and easy to operate. Moreover, the high utilization rate of the two lines required that the downtimes be minimized.

The excellent preparations and the painstaking planning of resources allowed the rebuild to be carried out within two weeks and production to be restarted as scheduled within two weeks, including production support. The updated production lines 5 and 6 were accepted by the operators within a short time and are now running smoothly.

**Range of retrofit programs**
The Bühler Chocolate & Cocoa business unit offers its customers an extensive retrofit program. Named “Fine,” various measures are available for updating existing chocolate production lines and ensuring high uptime. Besides optimized control of lines by the FineControl system, the FineLux dry-running protection system provides effective protection of the rolls, FineSense allows online measurement of the particle size, FineGap enables electronic roll gap adjustment, and FineAngle ensures accurate product feed. Other life-extending measures of the retrofit range include rebuild kits for the roll and the hydraulic fluid cooling systems in addition to reconditioning of the rolls. (bos)
Aeroglide acquired

Buhler has acquired the shares of the U.S. company Aeroglide Inc. from Compass Diversified Holdings. Aeroglide is the leading mechanical engineering company for drying and other thermal processes in the fields of food, feed, and industrial applications. Buhler will operate Aeroglide as an autonomous center of competence and business unit. Aeroglide and Buhler have maintained a close business relationship for many years. The Aeroglide drying systems, which are based on belt conveyors, supplement the product portfolio of Buhler especially in the area of extrusion. In 2007, Aeroglide Inc. generated sales of 64 million U.S. dollars with 230 employees. The company, which is headquartered in Raleigh, North Carolina, is active on a global scale and has sales sites in the U.S., Asia, and Europe. (ca)

Buhler Benelux has moved

In February 2008, Buhler Benelux moved out of Brussels to Mechelen (Bedrijvenlaan 3, 2800 Mechelen). The new facilities in a modern office complex are strategically located between Brussels and Antwerp. Buhler Benelux has a staff of 18, who are active in sales, customer service, and engineering. (thb)

New Customer Center opens

After a construction period of just under 16 months, Buhler CEO Calvin Grieder officially opened the new, modern Customer Center at the Buhler headquarters in Uzwil in March 2008. In the future, the new Customer Center will serve as a meeting point for the over 1800 visitors that come to Uzwil every year from all corners of the world. The Buhler Customer Center is housed in a three-story wing adjacent to one of the Buhler high-rise office buildings. Beside a new reception area, it also boasts a generously sized show room, a bistro, and several meeting rooms equipped with a state-of-the-art infrastructure. With its laboratory character, the elegant new structure reflects the technical edge and the quality image of the Buhler Group. With the color white, which dominates the new building interior, Buhler systematically emphasizes the values of competence, progress, openness, and customer friendliness. Retreat areas in warm hues offer visitors a workplace in a pleasant atmosphere, a library, and a place where they will find peace and quiet. (ca)
In Vejle, Denmark, Buhler is expanding the Lantmännen Group’s existing facility into one of Europe’s largest and most up-to-date flour mills. The new Lantmännen mill will be the first large-scale flour mill to be completely automated on the basis of the new Buhler WinCoS.r2 automation system.

The new mill of the Danish Lantmännen affiliate Lantmännen Cerealia in Vejle is acknowledged to be one of Europe’s most modern grain milling installations since it started production in the summer of 2008. Of the old installation, only the three grain silos and the finished product bins were integrated in the new facility. The old grinding lines were shut down. The Buhler Grain Milling business unit replaced them by building a complete state-of-the-art plant incorporating two soft-wheat mills with grinding capacities of 24 t/24 h and 480 t/24 h plus a rye mill with a capacity of 180 t/24 h. In addition, a new flour storage and handling system including a bulk loadout section with a holding capacity of 5000 metric tons was constructed. All the byproducts of the new facility are processed into pellets on a new pellet mill and sold to feed manufacturing plants.

**Fully automated**

Part of the order was to enable the new facility to be operated fully automatically on the basis of the latest industrial grain processing methods. Moreover, operation of the plant was to be guided and easy in order to ensure a consistently high product quality and to prevent operating errors as far as possible. The entire concept was developed in close cooperation with the customer on the basis of the new WinCoS.r2 automation system. In order to fulfill the requirements for fully automatic operation, all the plant sections from grain storage and cleaning to grinding and flour storage and handling with bagging and bulk loadout were equipped with cutting-edge machines, sensors, and technologies.

**Smart fine-tuning of processes**

The new Buhler WinCoS.r2 process automation system offers Lantmännen Cerealia numerous advantages. Thus, its navigation system determines the “right” path for the materials through the plant in terms of
energy consumption and/or throughput capacity. The system thus mini-
mizes operator inputs and prevents errors, and it optimizes the capacity utilization of the plant while ensuring optimal energy management. In addition, the system creates an energy report for each production job, which provides information on the energy consumed per kilogram of finished product. Lastly, the power consumption of each motor in the entire plant is logged. This data is used for the early maintenance warning system and provides a transparent picture of the energy balance. But WinCoS.r2 also ensures the quality-related monitoring and management of a large num-
ber of different products. This increases the flexibility of the plant. So-called “product interlocking” prevents undesirable cross-contamination of different products. After the production process, the system also fully auto-
matically transfers the products to the bins and monitors them during storage.

Complete traceability
Automatic recipe management and the closed control circuits for ash and gluten ensure optimal product consistency and reproducibility. All the end products are always produced in the identical quality. All the data – including that from the laboratory – is completely recorded, which allows permanent traceability and detailed analyses.

Last, not least, the new flour milling installation of Lantmännen Cerealia is equipped with a multimedia information center, which automatically provides information by SMS or email in case of irregularities. A remote access feature allows the staff of Lantmännen and Buhler to make quick “healing” interventions. (bos)
Three special things

The customer is special, the product is special, and the production system is special – the new Buhler extrusion system operated by the Brazilian company Inquil Indústria de Amidos Especiais Ltda for producing modified starch for industrial applications.

Set up in 1970 as part of Motrisa agro-group, Inquil has contributed significantly to the industrial development of the Brazilian economy for over 30 years. Today, Inquil Indústria de Amidos Especiais Ltda, as the company has been named since 2004, is headquartered in Treze de Maio in the federal state of Santa Catarina in the south of Brazil. Inquil produces tapioca starch and other modified flours for the Brazilian food industry as a side business. But the company’s main activity is the production of modified starch for industrial applications.

Cassava root as raw material

Over the years, Inquil Indústria de Amidos Especiais Ltda has evolved into a specialist for producing specialty modified starches for a wide variety of uses. The raw material for making modified starch is the root of the cassava (manioc) plant. The treated and dried root is processed into tapioca, an all but tasteless starch. Worldwide, some 190 million metric tons of tapioca are produced, a little more than 10 percent in Brazil. In its unmodified form, tapioca is a staple food for about 500 million people in various African, Asian, and South American countries.

Cosmetics to oil extraction

Inquil transforms tapioca into modified starch. Tapioca is transformed into water-soluble and extremely water-absorbent and sticky modified starch. Together with other secret ingredients, this starch is mixed into a specialty binder for industrial applications.

The specialty starches produced by Inquil are ultimately used in such exotic areas as crude oil extraction for binding drilling sludge or in the foundry industry for binding sand particles or clay-type minerals. But Inquil starch is also applied by the cosmetics and textile industries in the form of different binders.

New Buhler customer

Until a year ago, Inquil produced its modified starch on a single-screw extruder from a South American manufacturer. But because of recurrent
machine failures and downtimes, Inquil Directors Pedro Tocchetto Thormann, Marcelo Belleza Stella and Lázaro Antonio Alves sought an alternative. Upon the recommendation of a German starch producer, the board directors came into contact with the Buhler extrusion specialists. Together, the partners looked for a solution for this specific application of Inquil. The Inquil directors were soon convinced that the Buhler extrusion process was what they needed.

**Complete extrusion system**
In May 2005, Inquil ordered a complete extrusion system. A twin-screw extruder was chosen for the core extrusion process, with two intermeshing screws that clean each other. The order also comprised the entire process control system. The customer provided the raw material feed system and the grinding equipment. The compact production line was installed in a new building and went into service in the course of 2006.

Ever since, Inquil’s new starch production system has been running smoothly and to the customer’s entire satisfaction. Inquil Directors: “We are very happy about the handling of the project and also the performance of the new system.” Inquil is already teaming up with Buhler to tackle a new project: an extrusion system for making food-grade starch. (bos)

**Food ingredients**
The variety of food ingredients produced around the world on Buhler extrusion systems is immense. The most important are modified flour and starches, breading, upgraded milling by-products, and textured proteins. The processing of raw materials based on starch or proteins using an extruder creates a wide range of different functional characteristics of the finished products. The extrusion process is flexible, effective, and efficient. The special advantage of modifying starch by extrusion rather than using the chemical method is the cost-effectiveness of the production process and the easier food declaration required by law. The flexibility of the twin-screw extruder and the process expertise of the Buhler technologists enable one single process flow chart to be used for all food ingredient applications. (ds)
Two large-scale contracts from South Korea

The Buhler Grain Milling business unit has signed two major contracts in South Korea worth a total of 45 million Swiss francs. For Korea Flour Mills Co. Ltd., Buhler will supply two flour mills in Dangjin with a grinding capacity of 350 t/24 h each plus a grain mill for processing organic wheat for 36 t/24 h. Present at contract signing (top photo, left to right): D. H. Noh (Managing Director Procurement Headoffice), Y. G. Kim (Director TFT-Leader Dangjin), W. Kesselring (Buhler), Y. G. Si (CEO & President Korean Flour Mills Co. Ltd.), W. Knausberger (Buhler), Y. W. Noh (General Manager TFT-Dangjin). For Daesun Flour Mills Co. Ltd., Buhler will build three flour mills in Asan City with grinding capacities of 300 t/24 h (one) and 150 t/24 h (two). At contract signing (bottom photo, seated): K. H. Park (CEO & President Daesun Flour Mills Co. Ltd., right) and W. Kesselring (Buhler). (Bottom photo, seated, left to right) W. Knausenberger (Buhler), H. S. Koo (Director & TFT-Construction), D. K. Na (Vicepresident & TFT-Leader Asan), K. K. Choi (Director & TFT-Automation), D. J. Chang (Director Headoffice Finance), K. M. Park (Director & TFT-Production), J. S. Lee (Buhler). (js)

Buhler cooperates with Aveka

Buhler Inc., Plymouth, and Aveka Inc., Woodbury, which specializes in particle technology, opened a joint development and demonstration laboratory at Aveka’s Woodbury site in March 2008. It allows North American customers to receive even more competent local support in the areas of wet grinding and dispersion technology. Buhler will provide the product portfolio of its Grinding & Dispersion business unit for test activities. Aveka will make its capabilities in the fields of particle measurement technology, process engineering, and contract manufacturing accessible also to Buhler customers. (kg)

Die Casting: joint venture in Japan

Buhler and Japan Steel Works (JWS) have set up the joint venture company JSW & Buhler Machinery Ltd. with the aim of manufacturing and marketing cold-chamber die casting machines in Japan. The joint venture will be based in Tokyo near the JWS headquarters. It plans to manufacture cold-chamber die casting cells in the locking force range from 550 to 4500 kN. JWS and Buhler have been collaborating for one year now on the basis of a sales and service agreement. (ak)
Every four years, the Buhler Grain Milling business unit invites the German-speaking flour millers to take stock of the current situation. 148 experts from 28 countries and 4 continents accepted this year’s invitation to exchange views and ideas.

The German-language Milling Convention of Bühler AG can look back on a long tradition. The event, which has been organized every four years since 1975 by the Buhler Grain Milling business unit, attracts the owners, general managers, and production managers of flour mills from all corners of the world to Switzerland. The Buhler Milling Convention offers them the opportunity to discuss the latest developments in the industry and the most important challenges it is facing. It is also an occasion to maintain informal contacts with colleagues and competitors from around the world.

Extensive program

The Buhler Milling Convention 2008 was held in the Wolfsberg Convention Center from April 24 to 26. Once more, the location with its modern infrastructure and the panorama it affords over the Lake of Constance proved to be the ideal venue for holding such an event.

A densely packed agenda awaited the total of 148 German-language participants from 28 different countries. One main focus was on the presentation of the newest Buhler equipment and process technologies. Another was on topics concerning today’s grain milling business such as the tense situation on the raw commodity markets, energy issues, and milling-
Event

specific matters such as optimal grain storage, cleaning, grinding efficiency, product safety, and value generation. Under the motto “The New Art of Milling,” the highlight of the event was the presentation of the newest Buhler products: the Antares roller mill, the WinCoS.r2 automation system, the new-generation NOVAPUR sieve frames, the NIR online checking unit, and the Sani-Mixer.

Clear expectations
This is the second time that Peter Quirin, general manager of the Quirin GmbH & Co. KG flour mill in the German city of Völklingen, took part in the Buhler Milling Convention. “I remember 2004 very well. Most of the forecasts presented then were fulfilled,” says Peter Quirin. His expectations are clear: “I want to hear in what direction the trends are pointing in the grain milling industry. In addition, I expect the Buhler experts to provide answers to the current problems that the industry is facing.” Last, not least, Peter Quirin and his wife Kathrin took the convention as an occasion to exchange views and ideas with milling colleagues. “We mainly exchange information with colleagues from far away,” explains Quirin, adding with a smile: “I was able to talk more openly with them than with neighboring mill operators.”

“Changed market environment”
Markus Haberfellner, general manager of the Haberfellner Mühle in Grieskirchen in Austria, says he has always been a 100-percent Buhler customer. What he especially appreciates about the Wolfsberg Milling Convention is the opportunity that it offers to “obtain information packed with power” from proven experts. “It gives me an up-to-date overview over the industry. In addition,” adds Haberfellner, “I can learn from other attendees.” What he expects of the “New Art of Milling” is “high product safety and quality at lower operating cost.” He expects this all the more since the market environment has changed drastically for millers. “The miller’s craft has to some extent faded into the background. Clever purchasing of the raw material has become eminently important.”

“The quiet times are a thing of the past”
“Buhler has always been at the forefront,” says Dr. Franz Cordesmeyer, owner of the Hemelter Mühle in Rheine, Germany. “It is therefore a must for me to attend the Buhler Milling Convention. This is where I am offered an overview over ongoing developments. We millers also have the opportunity to voice our needs and give our inputs. This is all the more important since the quiet times are now a thing of the past in our industry. Our business has changed fundamentally.” (bos)
KOOPMANS project

Success with master plan

A jointly created master plan forms the basis for renewing the flour mill of Koopmans Meel B.V. in Leeuwarden in Holland.

A plant remodel designed to secure the company’s future: The owners of the Dutch flour mill Koopmans Meel B.V. in Leeuwarden could choose after the turn of the millennium either stagnation or progress, and they opted for a forward strategy. Today, Koopmans is the number two in the flour milling industry of the Netherlands.

Master plan

The grain milling experts of Buhler Uzwil and the Buhler branch office in Brussels created a master plan together with the customer’s team headed by the new director of Koopmans Meel B.V., Minne Dijkstra. The goal of the plan was to ensure that the Koopmans flour mill would be completely modernized within ten years in order to meet the market requirements in terms of product quality and variety and to ensure the company’s competitiveness. The three existing mills (soft-wheat mill, rye and buckwheat mill, specialty flours mill) are to be modernized by new milling installations. Niek den Oudsten, in charge of the Koopmans project in his capacity as Buhler Benelux area sales manager, remembers: “The goal was clear. We were to develop a plan for the step-by-step construction of a state-of-the-art and largely automated mill on the existing premises in Leeuwarden. In addition, the new facility was to operate with lower energy consumption and with efficient manpower employment.”

Starting with the grain receiving section

The owner families gave the go-ahead in 2003 for executing the jointly created master plan. The implementation stage thus started. In an initial phase, the grain receiving (intake) section was redesigned and its efficiency was increased. First a new ship intake section was built, followed by the grain cleaning system. In addition, the entire grain receiving and storage section was automated by the Buhler WinCoS control system. Completion of this first stage ensures that the various grain varieties are optimally received, cleaned before storage, and stored separately on the basis of quality parameters.

Conditioning prior to grinding

The second section to be modernized was the processing stage directly downstream – the dampening and tempering system. Here, the grain stored in the bins is blended exactly as specified by the quality targets and
then mixed, dampened, and thus conditioned for the actual grinding process. The conditioned grain is then held in the production or tempering bins before grinding. As in the receiving section, also the equipment here was integrated in the WinCoS control system.

Creating ideal conditions for the new mill

With the completion of the second remodeling stage of the main cleaning section, the conditions for the most important part of the rebuild – the construction of a new grinding system – were only partly fulfilled. “As an intermediate stage, we still had to reorganize the special cleaning system for the two existing, smaller grinding lines,” explains Niek den Oudsten. For this purpose, a number of dampening bins had to be moved and were, of course, at the same time overhauled.

Knowing that the new mill with its additional products also meant that these flours would have to be handled, stored, blended according to customer requirements, and shipped, the project team also overhauled and modernized the flour storage and handling section. The patent flour blending system was updated, the capacity of the transfer line to the bulk load-out section was increased, and bottlenecks were eliminated. The special focus here was on ensuring product safety. On the basis of a quality assurance concept, final sifters, metal-detection, and sterilators were incorporated.

Den Oudsten: “Updating on the one hand enabled the efficiency and performance targets of the flour storage and handling system to be achieved, and on the other hand also allowed a higher level of flexibility in product variety and product safety.”

New grinding line

In 2006, work started on renewing the heart of the new flour mill. In the space created by numerous preparations, a new mill building was constructed where an old elevator (silo) once stood. It incorporates a state-of-the-art soft-wheat mill. The heart of the new grinding section is the roller floor with its ten Antares roller mills – four eight-roll stands and six four-roll stands. In order to further reduce the energy consumption of the new mill, the latest pneumatic conveying system was installed and new single-motor drives were selected for the eight-roller mills.

In addition, the new grinding system is equipped with Sirius sifters incorporating the new NOVAPUR sieve generation with wood-free sieve frames. The flour quality is continuously controlled by the newly developed Diode-Array MYRB-NIR online checking unit. Den Oudsten: “The new Koopmans grinding system complies with the Buhler ‘New Art Of Milling’ standard.” Of course, also this section was integrated in the centralized WinCoS control system of Koopmans.
Intermediate goals achieved
Together with the construction of the new soft-wheat mill, the flour storage and homogenizing processes in the flour silo were also reorganized. The plant overhaul was taken as an occasion to switch homogenizing of all flours to the partial homogenizing method in the start-up bins. The bins of the existing mills were rebuilt in the same manner. “In this rebuilding stage, we also realized the automatic building ventilation system with air make-up for the final construction stage. What remains for us to do now is to integrate the reorganized flour bins in the WinCoS control system,” says Niek den Oudsten. “Then we will have achieved our intermediate goal.”

Ahead of schedule
As yet, implementation of the master plan for modernizing the Koopmans mill in Leeuwarden still awaits completion. But rather than pausing, the people in charge want to tackle the next steps. “Actually, the master plan has been designed for a period up to 2012,” explains Niek den Oudsten. “But the work that has been done so far has had a very positive impact in the marketplace, allowing Koopmans to increase its sales. Customers’ commercial success has grown along with the modernization of the mill.”

The new reality has convinced the management of Koopmans that innovation is the right way to face the future and is looking for further improvements. It is not without pride that Niek den Oudsten adds: “It is an enormous pleasure for my project team to see our customer’s satisfaction with the expanded and remodeled flour milling facility. The new, largely automated mill achieves a higher output and reduced operating costs. And for us, our customer’s success is the most important motivation factor.” (bos)
A young and dynamic market

Nine countries, 165 million inhabitants, one organization: The team of Thomas Künzli is in charge of the Buhler Central America Region.

The Buhler Central America Region covers Mexico, Belize, Guatemala, Nicaragua, El Salvador, Honduras, Costa Rica, Panama, and Cuba. Together, these nine countries have a population of about 165 million, of which some 70 percent are younger than 30.

Dynamic region

“Our Buhler Central America market area is an extremely dynamic region enjoying rapid growth and offering promising opportunities,” explains Stefan Birrer, who headed the Buhler Central America Region from 2004 to April 2008. At present, he is busy initiating his successor, Thomas Künzli, into the secrets of the region. Thomas Künzli took charge of the Buhler Central America Region in mid-May 2008. Stefan Birrer has come to love the country and its people after “two times four years.” “It was extremely exciting to live in a rapidly changing, young society and time and again to face new situations. The friendliness and openness of the people is unique. If you are prepared to blend with society and accept its rules, you will receive a very cordial welcome. Thus, you very quickly feel at home in Mexico and also in the Central American countries. My wife, my two children, and I are returning to Europe with very many unforgettable impressions.”
Reorganized in 2006
The Buhler Technology Group has been represented by a branch office in Mexico for about 60 years. Before that, it only had an agency in the region. In 1992, the business activities of the region were grouped in Mexico in a new building in Toluca, some 65 kilometers south of Mexico City. In 2002, a first restructuring took place, in the course of which the small manufacturing unit was shut down. In 2004, Stefan Birrer – who had already worked for Buhler in Mexico from 1995 through 1998 – took charge of the office. A flour miller by training and a seasoned project manager, he started his job with the assignment of reorganizing the market territory between North and South America. The result: In 2005, Buhler moved to its new offices in Metepec, a neighboring city of Toluca. In 2006, the Buhler Central America Region was created, which – beside Mexico – includes the seven Central American countries plus Cuba.
Today, the Buhler Central America Region employs a total of forty persons: Seven work in administration, ten in sales, six in customer service, and seventeen in execution. The team also includes two Sortex agents, who have their offices in Guatemala and Costa Rica, respectively. Buhler Central America is a pure sales and service organization. The minor and ancillary components needed are procured from local subcontractors.
The new organization has so far proven its worth. The new regional manager Thomas Künzli plans to further expand customer service. “Here in Central America, we have tripled customer service sales over the past years. And additional potential still exists. We want to streamline our customer service and increase its focus on our customers’ needs.”

Focus on Mexico
The freshly created Buhler Central America Region generates sales of about 45 million Swiss francs. Of this total, the Buhler Grain Processing division accounts for about half, the
Engineered Products division for about one third, and the Die Casting division for the balance. Geographically speaking, about two thirds of total sales revenue is generated by business done with customers in Mexico, and this primarily by projects in the areas of Grain Milling, Rice, Chocolate, and Extrusion. In these market segments, Buhler is the leader in Central America.

The business unit with the highest sales is Grain Milling. In the past years, it implemented a number of new flour mills and mill rebuilds. In addition, five new extrusion systems were built in Mexico, Guatemala, and Cuba. The Buhler Central America Region achieved sharp growth on the Caribbean island of Cuba. Since 2004, some major projects have been carried out in this socialist country in the areas of Grain Milling, Chocolate, Pasta, and Extrusion. In Cuba, the government acts as our business partner in most projects, and we have had very positive experiences. Stefan Birrer:
“Our Cuban business partners are very open, direct, fair, and competent. What makes the projects in Cuba especially exciting is that solutions and in particular financing models must be tailored to the conditions in the country, and also that account must be taken of the limited technical resources that are available there.” Birrer expects that Cuba will also open up for private customers in the medium term.

Development and expansion

Thomas Künzli is confident about the future. “Stefan Birrer has laid outstanding foundations, which we can now build upon,” says the new regional manager. “We plan to maintain our large market share in Grain Milling and Extrusion and grow vigorously in the Pasta, Sortex, and Grinding & Dispersion business units. In addition, we will further strengthen our Fulfillment and Customer Service platform.”

Thomas Künzli has been with Buhler for 18 years. The 38-year-old mechanical engineer is looking forward to the country and its people: “I am really eager to know what numerous experiences I will have in my new function. At any rate, the first contacts I had with customers and my new colleagues were very encouraging. My wife and I plan to immerse ourselves in the people and cultures of the countries of my region. And I don’t think I will run out of work, for I am convinced that a very promising potential exists in Mexico, Central America, and Cuba in the various sectors in which Buhler is active.” (bos)

“Central America plus”

In the strict geographical sense of the term, “Central America” refers to the land bridge connecting North and South America. It includes seven countries: Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama. It covers a surface area of 521,000 square kilometers and is populated by about 40 million inhabitants. This strict definition of Central America is based on the shared past of Guatemala, El Salvador, Honduras, Nicaragua, and Costa Rica, which after Spanish colonial rule ended formed the Central American Confederation. In the Buhler organization, the region of Central America is defined somewhat more broadly. In addition to the seven countries of Central America, it also covers Mexico – which geographically speaking is part of North America – and the Caribbean island of Cuba. (bos)
Direct crystallization allows significant energy savings in the production of PET and crystallizable polyester. The CC-PET® process developed by Rieter Automatik and Buhler combines this benefit with the robustness and flexibility expected of state-of-the-art production processes and supplies a dust-free product of stable quality.

The production of different types of polyester today is a large-scale industry with tried and true, cost-effective manufacturing methods. Despite the trend toward plants offering economies of scale and the fine-tuning of all process stages, the largest potential for further cost reductions lies in the interfaces between the different process stages. One such interface exists after the pelleting stage, which links melt-phase polymerization with downstream solid-state polycondensation. This interface can be optimized by direct combination of the pelleting crystallization. This so-called direct crystallization is an eminently important development enabling energy consumption to be reduced during polyester production. It allows the energy contained in the polyester melt to be utilized for the crystallization stage. This direct crystallization eliminates the need for intermediate storage. This offers cost advantages, but at the same time increases the complexity of the overall process because previously independent operations are now combined.

Water-cooled

The direct crystallization process starts at the extrusion die, where the melt is formed into several strands of uniform thickness. Depending on the specific pelleting process applied, the strands will be maintained over a short distance and are partially cooled with water before being cut into pellets. The cooling water is maintained at a temperature of 60 to 95 °C. It is preferably separated from the pellets by a centrifugal dryer, with the pellets then being transferred to a crystallizer. In the crystallizer, the pellets are agitated by a fluidizing gas stream in order to prevent agglomeration. For higher throughput rate, several pelleting systems may converge in a single crystallizer. The total contact time with the water is typically in the range of 1 to 4 seconds. As an option, a screen may be used for separating oversize pellets, dust, and fines.

The main goal of the direct crystallization process is to transfer an optimal amount of energy from the melting process to the crystallization process. This optimum is not determined only by the reduction of energy consumption, but also by additional factors such as process stability, product quality, and operating flexibility. Temperature fluctuations can be balanced by supplying a controlled amount of heat to the fluidizing gas stream. This low “loss” of energy saved ensures permanently constant process conditions and thus a homogeneous product quality. At the same time, the
process can absorb a certain portion of cold material from the outside. If the melt-phase polymerization process is temporarily operated independently of the solid-stage treatment, this material can be returned later on to the process – a significant advantage in plants which are sometimes operated for several years without interruption.

**Joint development**

Rieter Automatik and Bühler AG, the market leaders in the supply of plants for manufacturing PET pellets and in the field of solid-state polycondensation, have jointly developed the Combi-Crystal-PET® (CC-PET®) process. It optimizes direct crystallization for maximum energy savings and process stability. This process can be used both for underwater strand granulation (USG, cylindrical pellets) and for underwater granulation (UWG, spherical pellets). Both granulation systems can be linked directly with the Buhler Q-crystallizer.

A typical application of the CC-PET® process is the production of PET with a low to average comonomer degree and an intrinsic viscosity between 0.55 and 0.9 dl/g. With lower viscosities and higher comonomer degrees, an intermediate conditioning stage is provided in the cooling fluid. An additional benefit of the CC-PET® process is that pellets with a higher surface roughness can be manufactured, which further reduces the stickiness of the pellets. The surface roughness is achieved without the dust generation otherwise typical of crystallization processes applying mechanical agitation. Quite the contrary is true: The CC-PET® process incorporates an integrated dedusting stage.

Amorphous pellets from the CC-PET process with increased surface roughness (right) – Amorphous pellets from a conventional granulation process without surface roughness (left).
All Buhler business units now have a unified appearance at trade shows. The new Buhler exhibition design had its premiere at the Interpack 2008 in Düsseldorf.

By taking part in trade shows and exhibitions, the Buhler business units can establish direct contact with selected customer groups. In such events, which range from large international trade shows to small exhibitions in hotel lobbies, Buhler visualizes its brand values and presents its ideas and products.

Unified appearance
Since the start of 2008, all exhibition booths have been designed on the basis of the identical principles. At the end of April, the new exhibition concept had its premiere at the Interpack 2008 in Düsseldorf, Germany. The Chocolate & Cocoa business unit systematically implemented the new concept down to the last detail on a surface area of 1200 square meters, Buhler’s largest ever. Designed entirely in black and white, the Buhler Interpack booth with its textile sky and its skirt boards all around formed an impressive unit – so to speak an exhibition within the exhibition.

What was most conspicuous about the booth were its clear structuring and its optimal visitor guidance and information: One side – the “Equipment Section” – featured a world first, three new developments, and tried and true solutions from the centers of competence of Buhler, Bindler, Frisse, and Barth. On the other side – the “Future Center” – engineers and process technologists provided customers with an in-depth insight into their development efforts. The Buhler Interpack appearance was rounded off by a generously sized bistro with adjacent meeting booths.

Positive responses throughout
The enormous effort made by the exhibition team was worth the trouble. “The responses we received were positive throughout,” says Doris Sieber, who was in charge of the exhibition. “Many visitors expressed their opinions spontaneously and praised our corporate exhibition design.” The attributes they used such as ‘generous,’ ‘fresh,’ ‘open,’ ‘modern,’ or ‘transparent’ prove that the objectives of the new exhibition concept were achieved.

Much praise was also heard from Buhler CEO Calvin Grieder. “You feel as if you were in a different world in the Buhler booth,” he said during his visit to Düsseldorf. “The new concept was perfectly executed. It passed its baptism of fire with flying colors.”

Customers surprised by the Future Center
One special innovation was the so-called Future Center. On a somewhat removed platform not accessible to the public at large, the Buhler engineers and process technologists for the first time ever unveiled their secrets and revealed future developments and trends. “With the Future Center, we sought direct contact with important customers,” explains Dr. Peter Braun, head of research and development in the Chocolate & Cocoa business unit. “We wanted to use this intimate setting and direct talks to hear about their views on certain developments and trends and learn about their needs and wishes.” Customers’ responses were positive throughout. Dr. Braun: “Customers were keenly interested in the Future Center and the openness they experienced inside. We held a large number of very good talks. However, we also found that exhibition visitors are still sharply focused on consumption. They had not been prepared to contribute anything substantial to core issues in the Future Center.” (bos)
Seized up!

What first looked like a simple repair job turned out to be a demanding, seven-day “operation.”

The Buhler wood pelleting plant operated by the Dold-Holzwerke company in Buchenbach in the Black Forest, Germany, has been running smoothly round the clock and seven days a week since it went into service in 2005. Then came Thursday, April 10, 2008, when there was a big bang and the pellet mill stopped abruptly.

Exact diagnosis
Production manager Christof Wangler’s exact description allowed a quick and precise remote diagnosis to be made by the Customer Center of the Buhler Grain Processing division: Very moist raw material had overtaxed the pellet mill. As planned for such cases, the shear pin of the overload protection mechanism had sheared off. Despite this, the main shaft had seized up. On the basis of the description given over the phone, a repair of the main shaft appeared possible without the need to replace the expensive component, which costs 20,000 Swiss francs. Service technician René Tajariol collected the necessary spare parts from the warehouse of Bühler AG and did not hesitate to set out on his 150-kilometer journey from Uzwil to the Black Forest.

Unsuccessful attempts
Though it proved possible to detach the seized-up emergency bearing from the roller shaft using a flame cutter, chisel, and forging hammer, the die holder module showed more resistance. First, an attempt was made to use a special construction and to apply the force of a 15-ton hydraulic press – to no avail. After additional attempts had also failed, the people in charge decided on Sunday to remove and repair the defective shaft at the Buhler factory in Uzwil.

The solution
At Buhler in Uzwil, everything was prepared for the repair, and when the
shipment from Dold arrived on Monday afternoon, a carbon electrode system was already in place. This special system for the thermal separation of metal parts allowed the problem to be readily solved. René Tajariol: “It was easy for us to detach the seized-up components. It was like cutting through butter!”

Now the actual repair work could start. From this point onward, everything happened very quickly: grinding, cleaning, installation of the spare parts, performance of the necessary tests – and on Tuesday evening, the roll shaft was ready to be returned to Dold.

**A satisfied customer**

The repaired shaft was installed without delay. On Friday – seven workdays after the defect had occurred – Dold restarted the wood pellet mill. The customer was satisfied. Production manager Wangler: “Despite adverse circumstances, the Customer Service GP department of Buhler worked perfectly.” Throughout the repair phase, production was bypassed without trouble and with a minimum maintenance requirement through a second pellet mill. Now that the two pellet mills are up and running again, they can be applied and maintained alternately every other day as usual. (bos)
How has the market accepted the new Carat two-platen die casting machine? Beat Müller carefully observed the market launch. The result: The Buhler two-platen technology has met with wide acceptance.

New equipment, new production installations, new organizations – this often gives rise to a certain amount of caution in the marketplace, to the point of open rejection. We are all the more pleased to report about the exact opposite, where initial skepticism and reserve vanished within a matter of a few hours. That is how we experienced the start-up of the first Carat die casting machine at the TCG Unitech company in Kirchdorf an der Krems in Austria at the end of March 2007. Of course, we must admit that we did not receive such a response to all the machines we have supplied to date. But after a certain “induction time,” all the operators of the Carat are highly satisfied with their new die casting systems. In the field of die casting, “satisfied” means nothing else than the fact that the machine

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fulfills all customer expectations and objectives: a maximum number of accept components per time unit at minimum cost. Among other things, these goals are achieved by reducing cycle times, producing components of a more consistent quality, and slashing costs during production changes. Beside these factors, higher capacity utilization rates and a lower space requirement of the new manufacturing cell also have a positive impact on cost-cutting.

**Higher production process stability**

Apart from the efforts we have always made to reduce the cycle time, the new Carat product line offers additional technical design features supporting this endeavor. Under similar operating conditions, production runs with the new Carat compared very favorably with those on a conventional toggle-joint die casting machine using a given die. The new two-platen technology applied in the Carat tends to reduce flash and thus improves the stability of the casting process. This goes to show that both the rigidity of the die closing system and the distrib-
Innovation of the locking forces have been substantially improved. The system better offsets die parallelism errors, which increases the die life expectancy and reduces the need for remachining the die cast components.

**Reliable production changes and shorter secondary process times**

During production changes, things usually become hectic in a die casting foundry. High die temperatures and die release agent deposits contribute to this commotion. A good machine design gives consideration to this fact. The design of the Carat is such that no tie bars will project into the die zone during production changes. Dies can be hoisted into the die area without restrictions; there is no danger of the moving die colliding either with projecting tie bars or any existing protective pipes and causing damage. In addition, the locking grooves and threads of the tie bars are always completely guarded and sealed off by the platens during production. This prevents contamination of the grooves and threads by die release agent and flash. In the manufacture of flat components, the enlarged die opening stroke allows the spray robot to spray the fixed die half without any risk of colliding with the extraction robot withdrawing the component. This improves the cycle time by several seconds.

**Lower space requirement**

When a foundry replaces an old 900-ton machine, the existing space can be easily filled with a new Carat machine with a locking force of at least 10,500 kN, usually even 14,000 kN, and this applies also to larger units. This offers the advantage of allowing larger components to be cast on a given surface area or, say, to switch from a single-cavity die to a double-cavity die.

**Popular Carat shift**

These benefits have been confirmed in the field. TCG Unitech in Kirchdorf works 16 weekly shifts. Capacity utilization of the system is well above 80 percent. Production manager Michael Thieser explains that most downtimes are caused by die changes, die problems, and operating trouble of the peripheral equipment. Only in rare cases are downtimes attributable to the die casting machine. It is therefore not surprising that the “new Buhler” is highly popular with the operating personnel, who are highly pleased when they are assigned to the Carat shift.

“**The new machine fully satisfies our needs and expectations. Nothing could demonstrate our satisfaction better than the fact that one year later we are now ordering two additional Carat machines!**”

Manfred Halpe
General Manager TCG Unitech
Kirchdorf an der Krems, Austria
A success throughout

The new Portalino Combi in operation in China Bay, the port of Trincomalee in Sri Lanka, has an impressive size. But the “Big Baby,” as the locals call it, is also distinguished by its high performance in unloading and loading ships.

The Prima Flour Mill in Trincomalee, Sri Lanka, boasts a capacity of 3600 metric tons a day and is thus one of Asia’s largest flour mills. Prima has its own pier installations, which were equipped with two Buhler pneumatic unloaders (250 t/h each) as far back as in the eighties. However, what was lacking up to now was the possibility of loading vessels with bran pellets, a byproduct from the flour milling process. Since a few months ago, the specially enlarged Prima Flour Mill pier has been equipped with a novel combined loader-unloader from Buhler. In designing it, special attention was paid to standardization. It offers the customer added value in terms of operating reliability as well as maintenance. Reduced energy consumption and low-dust loading are additional crucial features.

The new Portalino Combi is a further development of the existing Combi units offered by Buhler up to now. The loading capacity is 250 t/h for bran pellets and 300 t/h for wheat, and the unloading capacity 300 t/h for grain.

The new Portalino Combi in the port of Trincomalee, Sri Lanka.
Sortex moves to new site

The Buhler Sortex business unit officially opened its new factory in the east of London at Gallions Reach on March 14, 2008. Stephen Timms, British Minister of State for Employment and Welfare Reform, inaugurated the new Sortex headquarters in an official ceremony in the presence of Buhler CEO Calvin Grieder and Newham Councillor Alec Kellaway. Sortex was founded as Gunson's Sortex in 1947, when London was preparing for the 1948 Olympic Games. Sixty years later, the infrastructure requirements of the 2012 London Olympics forced Sortex to move from Pudding Mill Lane to Gallions Reach. For Sortex Managing Director Bruno Kilshaw, the new building and the relocation were one of the “most demanding projects” in his professional life. Stephen Timms praised the hard work, creative thinking, and commitment that made it possible to construct the new building and to move into it within a mere two years. The new Sortex site is now also the base of the U.K. affiliate of Buhler. CEO Calvin Grieder is convinced that merging the two entities in a single site will appreciably improve their profitability and reduce their costs. In recognition of his accomplishment, he handed Bruno Kilshaw a traditional souvenir from Switzerland – a cow’s bell in which was engraved: “May the Olympic spirit lead the Sortex team to new frontiers, growth, prosperity, and customer success.” (ti)

Committed to the coffee market

The Buhler Chocolate & Cocoa business unit is stepping up its activities in the field of coffee. In the future, the Buhler product portfolio will also include turnkey systems for the production of roasted and ground coffee. It covers the entire process chain. In this connection, Buhler has signed a partnership agreement with the Italian company Petroncini Impianti. Petroncini has accumulated almost a century of experience in the area of coffee roasting. (thb)

“Medium Market” at the Victam

The Buhler Feed & Biomass business unit recently presented its new “Medium Market” product line for the first time outside China at the Victam in Bangkok. The livestock feed and aquafeed producers from Southeast Asia were particularly interested in the new pellet mill, the single-screw extruder for aquafeed production, and the new conveyors of the new product line. (th)
The Diagram issue No. 15 appeared in August 1955. After a number of double issues, this was a leaner publication with only twelve pages. An initial article discussed bulk flour storage in bins. The unknown author describes the advantages of this storage method compared with traditional stacking of bagged flour, taking the De Sleutels flour mill in Leiden, Netherlands, as an example. It is said that millers can roughly double the holding capacity of their storage facilities per cubic meter by using bulk storage. In addition, the labor requirement for storing, staging, and loading out is minimized. Last, not least, the concrete bulk storage bins allow building designs to be simplified so that they are less expensive. Another basic text evaluates different blending systems in feed manufacturing plants. When comparing the batch with the continuous system, it is found that the labor requirement of both plant types is roughly the same. Efficiency improvements are almost only possible in handling the raw materials and the finished products. The third basic article explains the new “Aerojet” hulling process for oats and other cereal grains. It describes in an illustrative way how the new process boosts yields to a remarkable extent. The editors also present a hammer mill of straightforward and rugged design for feed production plants. Finally, an article on a new feed mill shows how the hammer mill, blending & mixing system, and the bulk storage section interact in a large-scale project. The customer is the “Raiffeisen-Kraftfutterwerk Würzburg” feed manufacturing plant in Germany owned by the BAYWA (Bayrische Warenvermittlung landwirtschaftlicher Genossenschaften AG), which is said to have thus become “Europe’s most up-to-date feed mill.” (bos)