Bühler Food Solutions.
Innovative Processing Technologies.
Worldwide, wheat is the staple food of 3.5 billion people; more than 2 billion people live on rice, and the predominant source of food of 900 million people is corn.
Bühler is the specialist and technology partner for plant, equipment, and services for processing basic foods and producing advanced materials. The company operates in over 140 countries and has a global payroll of about 9000.

Especially industrial food producers benefit from the Group’s competent services as a partner in consulting, technology, development, project handling, and customer service. With its expertise and extensive experience that it has accumulated over the decades, Bühler is always in a position to develop solutions tailored to customers’ specific needs and thus to generate added value and success for them in the marketplace.

Bühler offers its customers an integral range of services covering all process stages of food production – from materials handling, cleaning and storage to shaping and making the required end product.

This applies to everything from the processing of grain into flour or pasta; the production of chocolate, cocoa, or coffee; or the manufacture of vegetable oils, malt, or extruded products.

See for yourself.
Innovative process solutions for food production – from a single source, on a global scale.

Markets

- Grain
- Rice
- Pulses
- Fruit, vegetables
- Beer
- Cocoa
- Chocolate
- Nuts
- Coffee
- Pasta, couscous
- Cereals
- Snack foods
- Food ingredients
- Formulated animal feed
- Petfood
- Aquafeed
- Oilseeds
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Bühler is the global technology partner of companies in the grain processing industry.

The Grain Milling business unit offers customers around the world cutting-edge process technology and innovative engineering services for processing soft wheat, durum, corn/maize, rye, oats, barley, millet/sorghum, buckwheat, soybeans, peas, and beans. This includes comprehensive total solutions as well as stand-alone machines for each process operation.

All Bühler processing systems ensure gentle handling of the valuable raw materials and achieve top product quality and yields. They minimize production and manpower costs. This has been so for over 150 years. Bühler also offers solutions for upgrading byproducts such as bran and germs for healthy nutrition.

Bühler Group’s Grain Milling business unit operates in all continents, close to its customers thanks to its over 70 affiliated companies and branch offices. Bühler employees have face-to-face contact with customers in all corners of the world and understand their culture and language. They are excellently trained, highly motivated, and eager to offer customers top performance.

The Grain Milling business unit offers its customers training in its own Training Centers in Switzerland, China, and Brazil and supports the Swiss Milling School in St.Gallen, which is an internationally acknowledged institute for training grain milling technologists.

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**Grain Milling process solutions.**

**Grain milling.** Bühler provides state-of-the-art process technology for transforming natural raw materials such as soft wheat, durum, rye, and corn/maize into high-grade flour and semolina products.

**Specialty milling.** Bühler can look back on a long tradition of designing and constructing systems for processing oats, soybeans, buckwheat, and pulses into flakes and flour.

**Brewing.** Bühler solutions in the fields of malt handling, cleaning, and crushing prepare malt and raw grain for further processing in the brewhouse.

**Value-adding processes.** Bühler offers solutions for the heat treatment and product stabilization of flours, germs, and bran for the food industry. This also includes the blending and mixing of flours for bakeries and the production of instant baking mixes for consumers.

**Materials handling.** Fully automatic conveying, weighing, bagging, storage, and online quality checking of a wide variety of dry solids for flour mills, bakeries, and other food industries.

**Services.** As a partner, Bühler assists its customers throughout the life cycle of their plants. The Group offers training and continuing education, laboratory analyses, and process development in its own technology center, in addition to technology consulting at customers’ local sites and customized services.
Optical Sorting. Separating the wheat from the chaff.

Bühler is the global technology partner of the rice industry and the partner of customers sorting high-grade bulk materials.

Bühler Sortex is the global leader in the development and supply of innovative sorting solutions for the food processing industry. These sorting systems help our customers satisfy the rigorous quality requirements of their own consumers. They protect the reputation of their brands and thus enable them to achieve a significant competitive edge in their markets.

The Bühler Sortex product portfolio includes optical sorters capable of detecting and removing product particles with color, shape, and size defects as well as foreign matter contained in foods. The applications of these innovative systems are varied: They range from grain sorting and the sorting of nuts, pulses, seeds, dehydrated vegetables and fruit, spices, plus fresh and frozen fruit and vegetables to rice sorting.

Rice Processing: Higher profitability grain by grain.

Bühler Sortex sets the standards in the rice industry. Our rice processing systems with throughput capacities ranging from 2 to 120 metric tons per hour ensure top-quality rice and maximum product yields. The proportion of broken grains in processing is minimized, as well as the cleaning requirements, thanks to an efficient cleaning concept.

Bühler also offers other value-adding solutions such as vitamin-fortified rice or the production of rice pasta.

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Optical Sorting process solutions.

Removal of foreign matter in order to improve product safety and to achieve a consistently high product quality. Color sorting in order to obtain a uniform product appearance with a consistent color. Shape recognition (oversize, undersize, shape defects) helps boost the value of customers’ products and the profitability of their operations.

Rice Processing process solutions.

Commercial-scale processing includes a large number of individual operations, ranging from reception and drying to storage, cleaning, hulling, polishing, and grading and packaging. Each of these process operations has been fine-tuned to minimize product breakage and thus maximize the yield of full rice. Additional upgrading processes such as grinding broken rice grains into high-grade rice flour or stabilizing rice polishings in order to obtain high-quality vegetable oils assist our customers in achieving commercial success.
Grain Logistics. Sustainable solutions along the food value chain.

Bühler is the global technology partner for complete solutions, equipment, and plant components along the entire food value chain – from collection of agricultural produce to processing.

Whether bulk storage facilities for collecting harvested grain, transfer warehouses for the grain trade, or customer-specific malting systems: Bühler is a competent partner offering individual on-site customer services on a global scale from inception to start-up. In providing these products and services, the focus is always on safety, reliability, and sustainability as the pillars of a customer relationship based on trust.

Four market segments for meeting individual customer needs.
- Collection Points stands for the development of individual solutions for collecting and storing agricultural produce.
- Terminals is the optimal partner when it comes to supplying reliable grain handling and storage solutions.
- Malting caters to the malting industry's needs for building new and expanding and updating existing facilities, including the associated bulk storage systems.
- Components offers a comprehensive portfolio of grain management system components and machines.

Grain Logistics process solutions.
Grain cleaning. The goal of grain cleaning is to improve the storability of the grain and the quality of the product to be cleaned. This enables losses to be prevented and the production process to be improved and to be made more reliable.

Materials handling. Elevator legs, chain conveyors, belt conveyors, and screw conveyors provide the basis for a modular grain management product portfolio that systematically aims at meeting customers' requirements.

Dust control. Dust control and the resulting lower wear and tear increases the life cycle of machines and system components. In addition, it gives consideration to the requirements of explosion protection.

Drying. The proper preservation of grain makes it fit for storage and assures its quality and thus maintains its value for the producer.

Sorting. The analysis results obtained in real time during reception/intake of the raw material serve for verifying its quality and storing it in different bins according to quality- and value-based aspects.

Malting. The portfolio of products and services comprises the construction of new and the expansion and updating of existing malting facilities, including the associated bulk storage systems.

Ship loading & unloading. Bühler ship loaders and unloaders offer operators a wide range of applications: Whether mobile or stationary, and whether they are equipped with their own energy supply or are connected to an electric power supply – they will be sized to satisfy the different needs and can be optimally adapted to the local conditions.

Material storage. Bühler supplies storage systems in the form of turnkey plants. Different storage modes are possible to suit the specific conditions.
Brewing. Innovations that enhance the taste of any beer.

Bühler is the global technology partner of companies in the beverage industry.

As the market and technology leader in the grain processing industry, Bühler offers the beverage industry state-of-the-art process technology from a single source. Our aim is to create high-quality raw materials as the basis for achieving an efficient beverage production process by ensuring optimal preparation and processing of cereal grains.

The Bühler portfolio is very diverse, ranging from classic malting, bulk storage, and malt handling systems to grinding technologies, corn/maize mills for grits production, starch and sugar powder handling, and processes for making high-quality pregelatinized products.

Grain technologies for the beverage industry are a century-old tradition at Bühler and have been continuously refined on the basis of innovations.

Brewing process solutions.

**Malt, raw grain, and powdered product handling.** The backbone of any plant is a reliable flow of material. Bühler solutions range from receiving/intake pits and bin storage, weighing, and proportioning systems to conveyors for moving the product to the brewing house. Smooth operations are ensured by Bühler conveyors and dischargers as well as its smart automation solution. Bühler also masters the art of pneumatic handling of powders and bulk materials. The main applications involve specialty malt, starch, sugar, and kieselguhr handling.

**Cleaning.** Uncompromising cleaning efficiency is a prerequisite for obtaining pure end products. For this purpose, classic cleaning screens, fines separators, grading machines, destoners, and scourers for intensive surface cleaning are used. Bühler Sortex optical sorting systems ensure exceptional precision and separating efficiency. They are capable of detecting and removing foreign matter and fusaria-infested grains within fractions of a second.

**Malt and raw grain size reduction.** Bühler offers the most comprehensive portfolio of grinding systems for breweries and distilleries. Across the world, machines are in service for producing grit for mash filters as well as lauter tun systems.

**Grain upgrading.** Partially upgraded cereal grains influence the taste of beverages and the process efficiency in making them. Bühler possesses comprehensive fundamental knowledge of cereal grains and the associated processes, which enable it to roll out a continuous stream of new solutions. They cover everything from barley, wheat, sorghum, and malt hulling to thermally pretreated products.
Chocolate. Process solutions that melt on your tongue.

Bühler is the global technology partner of companies in the chocolate industry.

Almost daily, the global chocolate market surprises its customers with new recipes and creations. With the highly flexible Bühler production systems, there are almost no limits to the variety of shapes and tastes that can be achieved. Our innovative solutions ensure that chocolate article producers will achieve maximum yields and top product quality.

With their bundled know-how, Bühler, Bühler Barth and Bühler Bindler have evolved into the technology leaders in the field of chocolate production. Even the most exotic recipes for chocolates, chocolate bars, and figures can be produced by Bühler systems. Thanks to its own test facilities, Bühler can upon request take charge of the complete concept for industrial-scale production of a given recipe.

A century of experience in the field of process technology pay off for Bühler customers in the form of particularly economical chocolate production processes. With its proprietary DoMiWaCo™ process involving Blending-Mixing-Refining-Conching, Bühler sets international standards.

Bühler rounds off its chocolate production expertise with competent consulting services, trend-setting technologies, and an extensive range of services – from the raw cocoa bean to the finest chocolate specialty.

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**Chocolate process solutions.**

**Blending-Mixing-Refining-Conching.** The DoMiWaCo™ process developed by Bühler sets international standards: Blending-Mixing-Refining-Conching is the most widely applied process in the field of chocolate production.

**The SeedMaster process has revolutionized tempering.** The Bühler precrystallization process markedly extends the shelf life of filled chocolates. It consumes up to 60 percent less energy than conventional processes and is more robust in resisting interferences with the process.

**Depositing by FlexiNozzle™ — simply revolutionary.** FlexiNozzle™ is the name of the revolutionary new nozzle for depositing different masses across a wide viscosity range. The new depositing nozzle with its self-holding character has a positive impact on depositing processes in the food industry. With its high depositing accuracy, neat forming capability, and guaranteed string separation, FlexiNozzle™ is suitable for a wide range of applications.
Bühler is the global technology partner of companies which process cocoa and nuts on an industrial-scale.

Cocoa. Its botanical designation alone says everything – Theobroma cacao (food of the divinities). From this valuable raw material, products are created which are all but impossible for consumers to resist. The health-enhancing polyphenols contained in the cocoa bean pass through a large number of individual process stages, from harvesting to the creation of semi-finished products: cocoa mass, cocoa butter, cocoa powder. With its vast process expertise in the fields of cleaning, pre-treatment, shell separation, alkalization, roasting, grinding, and pulverizing, Bühler helps maximize the product quality and the yield. Its individualized solutions are instrumental in enabling the 500-plus flavor substances in cocoa to be optimally developed.

Nuts. In order to offer consumers the full pleasure of hazelnuts, peanuts, pistachios, almonds, cashew nuts and others, vast know-how of the valuable raw materials and of the upgrading process is required. Bühler knows what is needed to ensure gentle cleaning, separation, roasting, and size reduction and offers the appropriate plant and equipment for performing these operations.

Cocoa and Nuts process solutions.

Cocoa processing. Bühler develops and supplies complete solutions from the bean to cocoa mass, cocoa butter, and cocoa powder as semi-finished products. Commercially successful cocoa production depends to a large extent on the cocoa nibs yield that can be achieved. The NARS process developed by Bühler (Nibs, Alkalization, and Roasting System) enables the value-determining features – color, flavor, yield – to be optimally set.

Nut processing. Refined in a multitude of different ways, used as an ingredient, or quite simply enjoyed in their pure form – nuts, pistachios, and almonds are indispensable for a rich gourmet world. The valuable component substances are preserved to the highest possible extent by gentle processing in our sophisticated production systems. Bühler customers throughout the world appreciate the premium quality of the end products. Bühler offers nut processors systems and stand-alone machines that are particularly gentle with the product as well as cost-efficient. Hazelnuts, peanuts, cashew nuts, pistachios, or almonds are treated with the utmost care in Bühler plant and equipment. From cleaning and separation to roasting and grinding, the entire processing range is optimally covered.
Coffee. Technology for making premium coffee specialties.

Bühler is the global technology partner for industrial-scale production of coffee products.

The unique taste of roasted coffee and its stimulating effects are highly appreciated by consumers throughout the world. In order to perfect the enjoyment of espresso, filter coffee, Turkish coffee, or single-portion coffee in capsules, Bühler offers customized plants based on trend-setting technologies for industrial-scale processing.

With its innovative solutions, Bühler sets global standards. The entire range of processing – from handling to roasting up to grinding – is optimally matched to customers’ specific needs in terms of product quality, process efficiency, and economy. Each processing operation has an impact on the quality of the end product. Bühler solutions allow customers to benefit from optimized roasting processes for developing a wide variety of flavors, high-precision roller grinders for consistent grinding to the required fineness, and particularly gentle processes for conveying, degassing, and storing roast and ground coffee.

Bühler plant and equipment offers unrivaled reliability and operational efficiency. With its extensive know-how in the field of coffee production and its sensitivity to individual process requirements, Bühler designs tailor-made customer solutions for making top-quality coffee products.

Coffee process solutions.

Cleaning, grading, and handling of green coffee. Thoroughly cleaned and sorted green coffee is the starting point for making outstanding coffee products. Bühler technology for pre-treatment of coffee beans satisfies the most rigorous performance requirements of wholesalers and production centers. Bühler designs complete customized plants for processing green coffee. Systems for receiving, handling, mechanical and electronic cleaning, and sorting of the beans as well as storage and transfer are designed to meet individual requirements and are supplied as turnkey installations. Throughput capacities of 40 t/h and higher can be implemented.

Roasting. In the roasting process, the aroma precursors of green beans are transformed into the wonderful flavor of roasted coffee. The chemical and physical characteristics of roasted beans are greatly influenced by the roasting process and the key process parameters. The Bühler RoastMaster™ drum-type roaster is characterized by its unsurpassed process flexibility, consistently high bean quality, and absolute reliability. Different taste profiles can be produced by accurate roasting process control and are retained thanks to gentle further processing. The result is roasted coffee with a noble flavor.

Grinding. The new GrindDefine™ coffee roller grinder grinds coffee beans to different degrees of fineness and particle size distributions to suit the specific application and to ensure optimal interaction between the water and the coffee powder in the end product. Whether coarse, fine, or highly precise – this tailor-made Bühler solution for gentle coffee grinding satisfies the requirements of any specific application. A consistent ground coffee quality, operating efficiency, and top reliability can be taken for granted with the GrindDefine™.
Bühler is the global technology partner of industrial pasta producers.

The interaction between its Grain Milling and Pasta activities enables Bühler to offer its customers perfectly matched top-quality product solutions – from grain processing to dough preparation to drying up to the finished pasta.

Bühler knows and understands customers’ processes – and manufactures pasta production lines that meet the most stringent sanitation requirements as well as ensuring maximum flexibility in raw materials selection. Moreover, Bühler solutions allow maximum value to be generated from intermediates and byproducts.

The focus is always on responsible and gentle handling of resources. With its new Ecothermatik™ pasta dryer, Bühler sets energy efficiency standards in its drying lines. In the field of pasta presses, Bühler on the one hand offers its Polymatik™, which is suitable for processing a wide range of raw materials, and on the other hand its Priomatik™ as the perfect solution for processing coarse semolina. Thus, customers always have the optimal technology available for processing their raw materials into pasta products.

The Bühler portfolio comprises lines for making classic long and short goods, specialties such as twisted goods or lasagne, and solutions for producing couscous or instant pasta.

Pasta process solutions.

**Long goods such as spaghetti.** From dough preparation using two different press technologies to drying and cooling, customers’ requirements can always be given due consideration.

**Short goods such as penne.** Bühler short-goods production lines leave nothing to be desired and offer maximum flexibility and sanitation. Two different press technologies are available for preparation of top-quality dough.

**Couscous.** Bühler installations produce outstanding dry couscous in the gros, moyen, fin, and mesfouf formats. In order to ensure that products consistently meet top sanitation standards, the steam-conditioning belt is cleaned while production continues.

**Nidi, lasagne.** Lasagne, nidi, and special short-goods shapes are made by specialty lines in a consistently high product quality.

**Instant pasta.** State-of-the-art technology ensures cost-efficient production of instant dry pasta of premium quality.

**Corn / maize & rice pasta.** Bühler pasta production lines not only allow classic long and short goods to be made from rice and corn / maize, but on the basis of patented processes also pasta products in the form of rice grains and other rice products.
Extruded Products. Wide variety, productivity, and profitability at its best.

Bühler is the global technology partner for the production of high-grade foods, petfoods, and aquafeeds using the extrusion process. Bühler is the market leader in the field of breakfast cereals when it comes to offering innovative process solutions.

High-quality, with exactly the desired taste, attractively priced, and above all safe – these are the requirements that today’s foods and feeds are expected to fulfill. In order to meet this challenge, food and petfood producers require customized production solutions.

State-of-the-art extrusion technology allows a wide range of products to be made with unrivaled efficiency – and in all but boundless varieties: Color, shape, component substances, and taste characteristics can be varied to suit customers’ specific wishes.

The result: attractively priced high-grade products made by energy-saving processes. For example, Bühler is the global leader in the field of cereals production. With a plant portfolio covering the entire value chain, Bühler offers tailor-made solutions that are distinguished by their high degree of efficiency and automation. In this, Bühler Aeroglide with its energy-efficient and individually configurable dryers and toasters is the ideal partner for ultimate product upgrading.

Extrusion lines also allow additional value to be generated from byproducts obtained in food production, for example low-grade flours or wheat bran, which can be processed into higher-grade products.

Thanks to its comprehensive extrusion know-how and its passion for developing individual solutions, Bühler is always in a position to generate added value and success for the product ideas of its customers – for market leaders as well as for makers of niche products and proprietary brands. Test facilities and analytical laboratories are available worldwide for this purpose, where Bühler experts analyze and optimize customers’ products and processes.

Extruded Products process solutions.

**Cereals.** Direct-expanded products and crunchy flakes – extruded or cooked in the traditional manner, spray-coated or in their natural form.

**Bread crumbs.** Bread crumbs, panadas, and stuffings with texture, pore, coloration, a particle size variations.

**Modified flours & starches.** Modification of flours and starches for use, say, as binders in soups and sauces, for extending the shelf life of bread loaves, and much more.

**Grain milling byproducts.** Extrusion adds value to the byproducts obtained in grain milling, for example by upgrading of low-grade flour and bran into valuable food additives using thermo-mechanical processes.

**NutriRice™.** Reconstituted rice made from broken rice kernels. If required, fortified with vitamins and minerals, for example NutriRice™.

**Texturized proteins.** Extruders enable vegetable proteins to be texturized and to be used in many modern food applications as an alternative to meat.

**Petfood.** Extrusion ensures the production of high-grade and safe petfoods. Bühler supplies patented solutions for dry petfoods such as multi-colored products, treats, or semi-moist products.
Thermal processing. Perfect drying, toasting, and roasting solutions.

Bühler is the global technology partner of producers of dehydrated, toasted, or roasted foods as well as petfoods or aquafeeds.

Bühler Aeroglide ensures its customers’ competitive edge in a wide range of markets by using state-of-the-art drying process technology and other thermal processes. Its unique airflow systems ensure uniform heat and air delivery in making ready-to-eat breakfast cereals, snack foods, fruits, nuts, potato products, and other foods. Bühler is also a leader when it comes to drying solutions for the production of petfoods and aquafeeds or the manufacture of hot-air pellet expanders.

The systems offered allow operating costs to be reduced thanks to energy-efficient processes. Other hallmarks of Bühler solutions include assured optimal color and moisture content and a high-quality of the products processed.

All dryer designs satisfy the most stringent sanitation and cleaning requirements. Examples of this include full interior access for inspection, cleaning, and maintenance, elimination of debris collection points, fines management, and CIP (Clean-in-Place) systems.

Bühler’s commitment to offering customers genuine added value starts with the thorough understanding of the customer’s product and the related unique drying process requirements. This is supported by product tests and the development of special thermal profiles. For this purpose, Bühler Aeroglide offers test facilities and laboratories in Asia, Europe, and North America as well as field drying systems for use at customers’ sites around the world. The results of these tests are taken into account in machine design, plant engineering, and construction of the dryer systems.

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Thermal processing solutions.

**AeroDry™ conveyor dryers.** The focus of the Bühler dryer portfolio is on conveyor dryers. A wide range of models and configurations are available for the feed, food, and industrial markets. For the feed and food markets, enhanced sanitary design features have been incorporated to meet the food safety requirements of the most demanding customers. Cleaning time between changeovers is also dramatically reduced.

**AeroRoast™ conveyor roasters.** The AeroRoast™ continuous nut roaster utilizes a unique dual plenum air flow design that provides uniform, efficient dry roasting of nuts and seeds. Enhanced sanitary design features have been incorporated that eliminate debris collection points and make cleaning easy and less time-consuming.

**Impingement ovens.** These special ovens are capable of halving the processing time required to bake, roast, toast, or heat products. High air velocities bring the inner moisture to the product surface and then extract it quickly and uniformly.

**AeroToast™ fluid-bed toaster.** The AeroToast™ processes products by gentle separation, agitation, and surrounding with air in order to obtain the correct balance between heat transfer and moisture extraction. The fluid-bed toaster allows accurate control of the air and heat conditions.

**AeroExpander™.** The AeroExpander™ expands pelleted snack products without requiring any oil. Instead of deep-frying in oil, snack pellets are expanded with high energy efficiency by air circulation.
Feed. For livestock, fishes, and pets.

Bühler is the global technology partner of the animal feed and oilseed industries.

With its global experience and presence, the Group is capable of offering plant and equipment for all the process stages from processing of the raw materials to production of high-grade formulated feeds and vegetable oils.

Bühler equipment produces top-quality while ensuring economical use of the raw materials and energy. Low operating costs allow customers to gain a crucial competitive edge in the marketplace. And more, for the Group maintains partnership-based relationships with customers, who expect an integral range of products and services beyond the mere design and supply of feed production plants or oil mills. Customized service packs, maintenance contracts, repairs, and training opportunities ensure that local plants are always operated with maximum economy and that they make products of high-quality.

**Feed production.** Bühler feed production plant and equipment is characterized by high-quality, process reliability, and long life cycles – which not least is reflected also in high-quality end products. The production systems are based on a modular design and can be ideally tailored to the individual needs of customers and the most diverse livestock feed requirements. Furthermore, innovative solutions such as the direct drive of the new Kubex T pellet mill set new energy efficiency standards in the production of formulated feeds.

**Oilseed processing.** Bühler offers an extensive and innovative range of products and services also for processing oilseeds and other oil-containing vegetable raw materials. For all areas related to oil extraction and byproducts processing, with the exception of the expeller and extraction systems. In the production of table-grade vegetable oils, the Group sets its focus on gentle processing of the raw materials and a maximum product yield in order to preserve the natural properties and characteristics of the products processed.

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**Feed process solutions.**

**Livestock.** Complete feed production plants and stand-alone machines for making livestock feeds in a capacity range starting at 8 metric tons per hour.

**Aquafeed.** Fish feed for pros – Bühler extruders allow adjustment of the ideal density, sinking rate, size, water absorption rate and water stability of feeds.

**Premixes.** Complete plants and stand-alone machines for producing homogeneous and contamination-free premixes in line with the specified formulations for the entire feed manufacturing industry.

**Soy oil.** Preparation of soybeans by cleaning, (hot) hulling, cracking, and flaking prior to extraction. Hulls are ground for further use.

**Oil from soft seeds:** Sunflower seeds, rapeseeds, palm kernels, peanuts, corn/maize germs, copra, and cottonseeds. Processes and plants for soft-seed-specific preparation prior to the expeller process and/or extraction: front-end hulling and tail-end hulling.

**Extraction meals.** Preparation of the meals obtained in the extraction process for further uses.
Bühler meets fluctuating raw material prices and ecological challenges with innovative process solutions allowing more economical use of valuable resources. Thus, thanks to the optimal utilization of raw materials, customers benefit from higher-quality end products and generate higher added value.
All the other things we do.

Our competence as a partner in food production is high because we question our approaches day in, day out. We reconsider solutions and alternatives and observe our markets and those of our customers. We listen to our customers to identify their needs at an early stage. And we also learn from other business fields of our Group, for example:

**Grinding & Dispersion.** When it comes to cutting-edge wet grinding and dispersion technology, Bühler is the leading innovation partner of the industry – both in the fields of electronics and chemical engineering and for printing inks, coatings, and specialty applications. No matter what viscosities are involved in a specific customer application – Bühler knows the solution. Supplemented with process engineering know-how and customized service offerings, benefits are created which enhance the product quality and efficiency on a sustainable basis.

**Thermal Processes.** The Thermal Processes business unit supplies continuous systems and equipment for thermal treatment of different polymers, including the processes of crystallization, heating, cooling, drying, and polycondensation. These systems are used for both commodity and specialty polymers such as PET, PA, PC, POM, SAP, bio-polymers, etc. Moreover, Bühler supplies systems for recycling post-consumer PET into material for direct food contact applications. All systems can process materials in the form of flakes or granules of different sizes.

**Die Casting.** Bühler is the global technology partner for smart die casting solutions. Our new die casting cells set the standards in terms of both performance and integration. As a specialist in die casting technology involving a wide range of light metal alloys, we provide customized and efficient solutions.

Production systems based on a technology that has been continuously refined over the decades and an in-depth knowledge of die casting process structures provide the basis for efficient manufacture of demanding and complex components. For this purpose, Bühler supplies optimized casting cells and matched process controls and provides consulting services for die design and material alloy selection. Bühler supports customers in every project phase – from planning to start-up and beyond. This enables even extensive projects to be executed quickly and reliably.

**Nanotechnology.** The Bühler Nanotechnology business unit is a leading provider of nanoparticle dispersions, in particular metal oxide nanoparticles that are used as performance additives. Nanotechnology possesses a unique combination of chemical and process engineering knowledge, which is a crucial requirement for making stable and functional nanoadditives. Such additives do not only significantly improve product characteristics, but also enable the efficiency of application processes to be markedly enhanced.
Bioethanol. Grain is increasingly being utilized as a fuel supplier. Bioethanol can be extracted from corn/maize, wheat, barley, rye, and rice, which as renewable energy carriers replace or supplement fossil fuels. Bühler plants prepare the grain for fermentation and process the byproducts obtained during distillation.

Biodiesel. Biodiesel is a promising renewable fuel that is extracted from oil-containing plant seeds. In Bühler plants, oilseeds such as rapeseeds are transferred from the storage system to the cleaning section and then reduced in roller mills and prepared for extraction. Gentle preparation maximizes the yield. Bühler plants process the byproducts into feed pellets and prepare the pellets for onward conveying.

Wood. Wood and other biomass raw materials are becoming increasingly important in ensuring global energy supplies. Wood chips, sawdust, straw, and other vegetable raw materials are reduced in Bühler plants, separated from foreign matter, and shaped in pellet mills into high-grade and uniform pellets for heat and power generation. Also wood residues left over after the production of furniture, paper, or parquet flooring can be transformed into wood pellets.
Companies which process and produce foods face enormous challenges. The climate is changing, and at the same time the global population is growing. One of the greatest challenges of our time is to supply all the people on this planet with foods.

Bühler has taken up this challenge with its plant and equipment, which processes raw materials as gently as possible and with minimum loss. With its intensive research efforts, Bühler lays the foundations for developing innovative process solutions for treating and refining high-quality foods. Its detailed understanding of how organic materials are transformed from the raw material to the end product is key to the production of foods with a tailor-made functionality. Special attention is paid to the aspects of food safety, nutritional value, and sustainability as a basis for developing future solutions.

A state-of-the-art analytical laboratory is available for examining the physico-chemical and structural properties of the products of all process stages. A specialist team concerning itself with disciplines ranging from microscopy to rheology supports Bühler engineers in their process development efforts. The research staff attach high importance to establishing scientifically sound concepts for designing and specifying processes such as drying, texturizing, shaping, and grinding. In partnerships with universities, Bühler develops the basic knowledge that is required for developing tomorrow's technologies.

Bühler offers the grain processing food industry a new, customized service for optimizing flours. Experts in the Bühler Bakery Innovation Center conduct in-depth investigations of flours and their baking characteristics and develop sustainable solutions.

Innovations for better processes.
– Bühler works on smart automatic process controls for grain logistics and for this purpose develops online measurement technology and simulation tools.
– In addition, experts seek new, organically inspired ways for gentle processing of raw materials and extraction of valuable byproducts.
– Energy efficiency and sustainability are challenges of the future for which Bühler develops special concepts in order to improve the utilization of existing energy streams. This cuts costs and reduces the burden on the environment.
– Higher value generation in production processes is made possible by Bühler on the basis of integral process fine-tuning.

Research & Development. Making sure that the future has a future.

Beside innovative plant and equipment in conjunction with the latest process solutions, Bühler offers optimally matched service solutions across all the life cycle phases of plant and equipment. This extensive offering in combination with a global service network helps customers ensure their business success and thus their competitiveness.

Spare parts – quality down to the last detail. Only genuine Bühler spare parts are perfectly matched to Bühler plant and equipment. For only they are capable of meeting the most stringent reliability and value maintenance requirements.

Retrofits – Generating added value through updates. Updating plant and equipment with Bühler retrofit packages is an investment in the future that will always bear fruit. Depending on their specific nature and design, retrofits will – among other things – have a positive impact on service life, production reliability, capacity, sanitation, and ease of operation and maintenance.

Maintenance – Reliability thanks to operating trouble prevention. Bühler plant and equipment is extremely rugged and reliable. But in order to maintain its value in the long run, preventive and professional maintenance on a regular basis is indispensable. Customized maintenance concepts and experienced Bühler Customer Service experts ensure that production processes are optimally supported. WinCos Care, the customized maintenance system of Bühler, goes even a step further. It incorporates all maintenance-related information and offers extensive documentation options for ensuring maximum transparency.

Troubleshooting – Reliability creates uptime. The services offered also cover all forms of troubleshooting so that downtimes are reduced to the absolute minimum. And this anywhere in the world, round the clock.

24 h Helpline: +41 71 955 19 00

Consulting and training – Success thanks to Bühler know-how. Bühler consulting solutions and training courses enable customers to benefit from the know-how and the vast experience of its experts. This makes Bühler the perfect partner for future-oriented fine-tuning of business processes in the design of production processes and plant infrastructures, energy consumption optimization, and much more.

With training courses held at its Bakery Innovation Center (BIC), Bühler offers tailor-made solutions to the grain processing food industry. In practice-oriented courses, different flour qualities and how they are influenced by ingredients are evaluated in depth. This enables customers to develop optimized flours for entering new market segments. The BIC provides expert know-how, cutting-edge bakery and analysis equipment, and individual training courses.

Differentiation thanks to Bühler Flour Service. The Bühler Flour Service offers customized ingredient mixes enabling the quality of flours to be optimized. Consistently optimized flours and the possibility of incorporating new functionalities in flours help customers differentiate themselves and enter new market segments.

Every solution that Bühler Customer Service offers its customers gives consideration to the rigorous sanitation standards of the food industry. And it aims at maximizing the productivity and uptime of production systems while minimizing the maintenance costs.

This enables customers to focus on the development of their top-class food products, leaving everything else to Bühler.
Food Safety. Safe food from raw material to end product.

Food safety is an issue that has become increasingly significant over the past few years. Contamination must be prevented in food production processes, and it must be possible to completely monitor the processes from start to end.

As a global technology partner of the food industry, Bühler always aims at offering its customers trend-setting solutions in the field of food safety. Thus, Bühler machines are characterized by their ease of cleaning and their use of high-grade materials. Special design concepts improve the surface profiles of machines and thereby reduce product build-ups and contamination.

Complete and transparent traceability of products is a basic requirement in all areas of food production for ensuring successful risk management. Customers can achieve complete and continuous product retracing on the basis of the exact batch and process documentation produced by the Bühler WinCos process control system (WinCos Traceability). The additional integration of identification systems such as RFID (Radio Frequency Identification) or barcode even allows insights to be gained into individual process stages.

As a partner of its customers, Bühler additionally offers a large number of customer and consulting services.

Food safety – on the safe side with Bühler.
- Optical sorting solutions provided by Bühler Sortex remove foreign matter both in raw materials processing and in the end product.
- Dryers, toasters, and roasters of Bühler Aeroglise increase food safety by thermal treatment.
- Sterilization processes of Bühler Barth are customized solutions tailored to the treatment of nuts, cocoa beans, and spices.
- Special cleaning and sampling processes for grain processing and logistics are applied for processing and handling wheat, rye, and other basic foods.
- Polymatik™ pasta presses ensure high sanitation standards in pasta dough preparation.
- WinCos Care Service Management System: Comprehensive documentation of the maintenance history as a basis for food safety audits.
- SaniBran Retrofit for MKLA bran finisher: Wood frames are replaced by more sanitary stainless steel frames.
- Novapur Retrofit for MPAG / J, MPAH / K sifters: Wood frames and aluminum frame inserts are replaced by polyurethane frames and stainless steel frame inserts.
- BeltDrive Retrofit for Airtronic MDDK / L roller mill: Upgrading from gear wheel to belt transmission for eliminating gear oil.
- SaniChain Retrofit for RFKG chain conveyors: Upgrading with additional cover plate in the drive unit and deflection plate in the return unit for preventing material deposits and thereby ensuring food safety.