From bean to bar.

Solutions for the cocoa and chocolate industry.
Efficient technology all along the value chain – from raw material handling to the finished moulded chocolate product, perfected by excellent taste and shape.
Bühler plans and implements projects of all sizes. For the production of cocoa and chocolate.
From single solutions through to complete manufacturing plants “from bean to bar”.
The value-chain of chocolate processing. From the cocoa bean intake to the final article.

Cocoa Cleaning of the raw material
Quality assurance for the cocoa product starts with the gentle and effective cleaning of the cocoa beans. This improves product qualities, prevents adverse effects on the subsequent processes and therefore helps to ensure high availability of the plant. During processing of the nibs, the raw, cleaned cocoa beans are treated with infrared radiation to achieve the maximum possible yield.

Cocoa Nibs process
Economically successful cocoa production is determined to a large extent by the attainable yield of cocoa nibs. With the NARS (Nibs, Alkalization and Roasting System) process developed by Bühler, the quality features of the semi-finished cocoa products can be optimally defined. Depending on the system, the thermal procedures can be based on convective, conductive or combined roasting technologies. The injection of water or saturated steam reduces the germ count.

Cocoa Nibs alkalization
Alkalization is the basis for cocoa powder production with precisely defined qualities. Through adjustment of the pH value and determination of the pressure-temperature-time process control, the color intensity in the finished cocoa powder can range from natural shades through to deep brown, red or black tones.
Cocoa Process with whole beans
During the debacterization of whole cocoa beans, the proven Bühler Debac™ process performs efficient debacterization without affecting bean aroma. In the roaster, the bean aroma development is specifically encouraged through gentle drying and roasting. Depending on the plant, the thermal processes can be arranged in different ways. Debacterized and roasted cocoa beans are easier to break, which results in a higher yield during processing.

Cocoa Grinding/processing
In two stages, the nibs are ground to a cocoa liquor with optimum flow properties. Thanks to an evenly distributed energy density in the impact beater blade and bead mill, liquors with a very narrow particle size distribution are produced. In the subsequent processing stages, final products and intermediates of all kinds can be manufactured: powder, blocked cocoa liquor and high-quality cocoa butter for subsequent processing to create chocolate products.

Chocolate mass Dosing and mixing
Gentle conveyance and storage support the process of chocolate mass production. Efficient and accurate dosing ensures high throughput and reproducible quality. In the heart of the chocolate processing system, the chocolate recipes are produced. The ingredients are carefully mixed, with the high shear and kneading action producing homogeneous and plastic masses for further processing.
Chocolate mass

Two-stage refining process

Constant fineness is a precondition for ensuring a pleasurable chocolate experience. The Bühler two-stage refining process has set new standards worldwide in terms of quality and efficiency. The flexible two-roll and five-roll refiners produce chocolate, filling, and coating masses in a wide variety of compositions and with uniform fineness. The refiners are characterized by high efficiency, excellent food safety and optimum throughputs.

Chocolate mass

Conching

The chocolate mass is perfected in the conching process. Time-defined kneading and shearing, with the addition of air and heat, allows undesired acids and humidity to escape the mass and thus provides the typical chocolate flavor. This process guarantees optimum values for texture, melt and aroma as well as final moisture content, viscosity and yield value.

Moulding

Pre-crystallization

Chocolate articles manufactured with the Bühler pre-crystallization technology are characterized by far better gloss, a more dense crystalline structure and higher strength. Blooming is significantly delayed and storage stability greatly increased. With the SeedMaster™ technology, energy consumption in this process stage can be reduced by up to 75%.
Moulding

Tempering and depositing
The precise-weight production of innovative chocolate articles in numerous shapes and formats is carried out on plants that can be very flexibly adapted to the customer’s requirements. Many solutions are available for solid products and filled articles. Products can be manufactured using spot, ribbon or one-shot depositing, with or without ingredients, and with fillings ranging from liquid to solid.

Moulding

Special processes
Bühler also provides solutions for special products in the chocolate industry. For example, there are roto-spinning moulding lines for hollow figures such as Santas, bunnies or eggs and a separate moulding line for drops and semi-finished products. CoolCore™ enables extravagant praline shells to be produced, and with the one-shot depositing method, filled products can be made in just one work step.

Automation
High-quality products require faultless processes and complete traceability. Bühler has the necessary expertise and therefore ensures high plant availability. Bühler also offers ways of improving energy consumption, for plants or individual process steps. This optimizes the use of thermal and electrical energy and control of the entire plant.

All steps are important when processing the raw material to create a high-value end product – Bühler is familiar with every step right down to the final detail.
Make the best out of nature.
Maximum yield and unique cocoa flavor.

Cocoa beans are the basis of numerous luxury foods that make life sweet – be these finest chocolate, pralines or chocolate bars. The special aroma properties of high-quality cocoa beans require tailor-made processes, not least with regard to the requirements of the end products. One more thing: in addition to quality, the maximum yield is a decisive factor in achieving the best possible return from every ton in cocoa processing.

Bühler solutions ensure that more than 500 precious flavor substances can unfold in the cocoa bean during the roasting process.
Bühler plants are excellently suited to this challenging competitive environment, as they are flexible, economical and robust. There is good reason why Bühler has been known as a reliable partner for roasting plants in the cocoa industry for more than 100 years. The company operates on a global level – Bühler plants, which have been providing excellent cocoa products for decades, can be found on practically every continent.

Cocoa varieties from a wide range of sources are processed in a tailor-made manner with systems featuring the latest technology. This is true for both nibs and whole beans. The different roaster types enable product-specific settings to be selected to define the degree of roast. Individual roasting parameters offer customers practically unlimited options in flavor development. And thanks to new measuring procedures, customers can intervene in and specifically optimize their roasting processes. This is supplemented by reliable solutions for cleaning, debacterization, alkalization and grinding. Bühler is constantly developing new methods for cocoa processing so that customers can generate added value on the market.

**Benefits at a glance:**
- Maximum yield and efficiency
- Flexible roasting systems for the greatest possible flavor, color and product variety
- “Get the best out of your cocoa”
- Guaranteed process reliability and food safety
From cocoa to superior chocolate masses. Efficient and flexible production solutions.

It is not just the quality of the ingredients that determines whether a chocolate product tastes good and melts on the tongue. The processing method for the chocolate mass also plays a decisive role. With its DoMiReCo™ process, Bühler sets a unique quality standard for processing chocolate mass – for white, milk or plain chocolate creations. This process also offers highest throughput and optimum cost effectiveness. All this helps explain why a large part of the world’s chocolate tonnage is produced on Bühler machines.

70 % of the chocolate produced worldwide is made with the DoMiReCo™ process, developed by Bühler.
Thanks to decades of experience, Bühler has peerless expertise in the processing of chocolate masses. DoMiReCo™ stands for accurate dosing technology, reliable mixers, excellent results in the refiner and completion of the chocolate product in the conching process.

Thanks to their efficiency, robust design, ease of use and maximum raw material yield, Bühler systems are always a good investment, and pay for themselves quickly. The plant components are modular and therefore make different plant concepts possible – for example for achieving maximum throughput or producing specialties with frequent batch changes. Whether for small, medium-sized or large production volumes – customers find the optimum process for their applications at Bühler. These are supplemented by tailor-made processes for the manufacture of compounds, spreads and creams. A special food safety concept guarantees compliance with strict hygiene requirements in all manufacturing steps. And with energy-efficient machines and plants right through to complete production facilities, Bühler ensures sustainable processes for the manufacture of chocolate products.

**Benefits at a glance:**
- Best product quality and maximum flavor variety
- State-of-the-art chocolate refining and conching
- Processes for maximum throughput
- Solutions from 100 up to 10,000 kg/h
- Plants and machines with highest energy efficiency and food safety
Make chocolate dreams come true.
Moulding of bars, tablets or hollow figures.

Chocolate is special; for many people, it is the epitome of enjoyment: bars, tablets, pralines or other chocolate delicacies in numerous formats – with or without inclusions – are appreciated worldwide and produced in corresponding quantities. But good product properties such as shine and perfect bite are not simply a matter of course, they require plant components and concepts that deliver top results. As Bühler offers a wide range of solutions for depositing and moulding chocolate, customers can choose the ideal solution for their products from an extensive portfolio. What all the solutions have in common is their efficiency, flexibility and hygienic design.

Even the finest chocolate specialty will not reach perfection until it has been formed.
For different market and product requirements, Bühler offers tailor-made solutions that achieve the optimum result for the specific application. The depositing technology and thermal processes are configured differently depending on the line and purpose.

Bühler provides lines for manufacturing tablets, hollow figures, pralines and semi-finished products. Thanks to the modular design and extensibility of the plants, diverse customer requirements can be met. Regardless of whether the products are filled or not, all the solutions boast high availability and a long life.

Depending on the product and the required process, three different depositor concepts can be integrated into the plants. These are suitable for spot, ribbon and one-shot depositing. The CoolCore™ concept for cold-stamping chocolate shells and the SeedMaster™ crystallization process extend manufacturers’ options for improving the quality and appearance of the chocolate products.

Benefits at a glance:
- Plants for a wide range of end products
- Perfect shape and gloss of the final article
- Articles with best possible form and weight precision
- Flexible and modular plant concepts from 500 kg/h to 8,000 kg/h
- Highest plant availability
- Highest standards for food safety and energy efficiency
Reliable solutions for best products.
Availability, energy efficiency, food safety.

Bühler considers itself a partner to the chocolate industry. Therefore, machines and technologies only make up part of the portfolio. Bühler also offers comprehensive services to give customers a competitive advantage. These services include the laboratories and competence centers with their pilot plants, which Bühler maintains around the world and in which customers can optimize their processes and test and improve their products. A broad range of training for employees in laboratories and production facilities increases the workforce’s knowledge and thus lays the foundation for better production results, safer and more efficient processes and innovative product ideas.

A long-term partnership that puts your company a step ahead: know-how and technology for high market performance.
Bühler offers complete production solutions characterized by high energy efficiency and best food safety. New machines are always fitted with an energy-efficient drive concept to ensure valuable resources are not wasted. Where possible, thermal energy is reused and fed back into the energy cycle.

One important factor in chocolate processing is food safety. Here, new hygiene concepts with specially designed surfaces and stainless-steel executions ensure maximum safety during operation. This is supported by modern control concepts that improve process documentation and allow batches to be traced without gaps.

However, the automation solutions from Bühler not only provide maximum transparency, they also ensure that the plants run as economically and efficiently as possible. The focus here is on optimum controlling of the processes for the smooth production of high-quality cocoa and chocolate products.

**Benefits at a glance:**
- Support from a chocolate manufacturing expert – on site, worldwide
- Support for product and application development
- Tailor-made automation concepts
- Training for operating staff
- Continuous improvement to plant efficiency
At your service – 24/7 and worldwide.
Trust in the services of the market leader.

In many areas, Bühler is the technology leader when it comes to the production of cocoa and chocolate products. The tried-and-trusted machines and plants are known for their robust engineering and reliability. To ensure things stay that way, Bühler offers comprehensive services with its own representatives located around the world.

Customized maintenance, retrofitting and reconditioning packages ensure that machines are always state of the art. The advantage: customers can produce their articles profitably and safely even with older plants. Bühler is represented in more than 140 countries, maintains its own production, development and service locations worldwide and is quickly on site when customers need support. Technicians procure spare parts quickly and install them professionally.

Specialized Bühler service locations carry out extensive retrofits and offer roll grinding and replacement programs. Specially tailored training options enable the machines to be operated smoothly, allowing you to produce excellent product quality with optimum throughput. The training courses help improve plant output and keep operating staff abreast of current technologies and safety standards – for labor law regulations as well as food safety.

**Bühler’s services focus on:**
- Food safety
- Operator protection
- Operational reliability and quality consistency
- Overall equipment effectiveness (OEE)