Greater performance, safety and efficiency.

A range of services for systems for the processing of cocoa and nuts.
Optimization of existing systems.
Wise investments that pay off.

Manufacturers of cocoa and nut products value the robustness of Bühler plants. Customized maintenance, retrofitting and reconditioning packages ensure that the long-life machines are always state of the art. This ensures that even older systems produce first-class products while maintaining uniform quality and improved efficiency.

With customized Bühler services, you increase the overall productivity of your systems. Bühler provides comprehensive service and maintenance measures at your plants, supported by its representatives in more than 140 countries.

Technicians procure spare parts quickly and install them professionally. Specialist Bühler workshops take care of more comprehensive retrofits.

With training courses for employees from production, laboratories and maintenance, you invest in your company’s expertise. Processing steps are better understood, can be optimized thanks to the new knowledge, and thus made more efficient.

These services are rounded off by a global spare parts service which, even years after the machine is purchased, ensures that you are supplied with the required original Bühler parts as quickly as possible.

**Customized services improve:**
- Operational reliability and quality consistency
- Food safety
- Personal safety
Operational reliability and quality consistency. Process safety and control.

The cocoa industry has made massive progress in process optimization over recent decades. In order to be able to achieve further improvements in taste, energy saving or throughput speeds as well as improving process safety, new online measuring methods that can measure critical process parameters are required.

HydroKen™ technology has been developed so that the kernel moisture of cocoa nibs can be observed during roasting. A feature of the HydroKen™ measuring sensor is its robust and resilient design so that it can also be used at product temperatures of up to 140 °C and under abrasive conditions.

Here the kernel moisture of the cocoa nibs is measured 20,000 times a second. This allows precise monitoring of how the moisture of the product changes during the entire roasting process.

**Added value for the customer:**
- Roasting recipe optimized taking the Maillard reaction into account
- Energy saved during the drying phase because the burner power is controlled by demand
- Moisture level monitored, which represents a critical control point for sterilization
- Efficiency improved due to optimized retention times during roasting

Conductive and convective mode of operation controlled, which permits better control of the roasting process, energy saving and higher throughput.

The HydroKen™ measuring sensor can be retrofitted to all existing Barth Tornado drum roasters. As an option, it is also possible to integrate the measuring system into the existing control.

This additional option for process control allows more freedom when roasting, as it permits convective and conductive operation. The process variables recorded to date – time, temperature and pressure – can only be correlated with product moisture for the conductive operating mode. This is not possible for purely convective operation. The HydroKen™ sensor now allows the process of convective/conductive roasting to be controlled, based on the surface and kernel moisture of the cocoa nibs. As a result, roasting results are improved, fat migration is prevented and yield is increased.
Operational reliability and quality consistency. Forward-looking planning to prevent production.

Drum replacement on the Barth Tornado drum roaster

Bühler machines such as the Barth Tornado drum roaster are designed for continuous operation under heavy loads. To minimize downtime and loss of production, it is therefore important to replace critical components regularly. This applies in particular to the roasting drums and running rollers – if these are damaged, production will grind to a halt.

Apart from the tried-and-tested roasting drum with the “Tradition” design, Bühler now also offers the new energy-saving “Performance” version. Thanks to the use of new air circulation technology for the hot air, the revised design of the roasting drum increases the energy input on the jacket surface for convective operation by up to 20 %, thus reducing gas consumption considerably. The optimum alignment and number of the mixing elements for the two versions produce extremely precise mixing, which permits gentle processing of the raw material. This is significant as it reduces the shearing force, which can cause fat to escape from the cocoa nibs and more fines. Among other things, the new drum design contains strengthened spokes, which have been especially developed for the greater loads of high-alkalized cocoa nibs.

Drum replacement for the Barth Tornado roaster includes the following components:

- Roasting drum with strengthened spokes and in two designs – “Tradition” and “Performance”
- Exchange of the entire roasting drum (stainless-steel model) with mounted drive shaft and water injection tube
- New set of running rollers with eccentric shaft (fully mounted)
- New drum bearing with all the required wearing parts (sealing rings, locking plate)
- Installation of the components by experienced service technicians on your premises

Added value for the customer:

- No unexpected downtime and consistent roasting quality as a result of the planned replacement
- Mechanical adjustability (tightness, radial runout) of the machine optimized, resulting in less wear
- Optimized energy input of up to 20 % with the “Performance” drum design
- Strengthened spokes for higher loads
- Used roasting drum/running rollers can be refurbished, if suitable, and re-used as spare components
Industry is increasingly being driven by energy efficiency and carbon footprints. Bühler has accepted this challenge and is offering an innovative retrofit package for the tried-and-tested Barth Tornado RS drum roaster with the new “Performance” roasting drum. The ingenious way in which hot air is routed forces the hot air to be applied to the outer surface of the roasting drum for a longer time, meaning that, when compared to a conventional roasting drum, air is applied to 50% more of the surface. When combined with the optimized relative speed of hot air to the drum outer surface, the energy input achieved is increased by up to 20%.

If one takes as a basis a recipe with a hot air temperature of 550 °C after the burner, if the mass flow rate of the hot air remains constant the heat absorbed for the roasting drum with the “Performance” design is max. 23% better than for the drum with the “Tradition” design. The roasting drum with the “Performance” design can therefore be installed in an existing roaster without too much conversion work.

The retrofit package for the “Performance” design roasting drum on the Barth Tornado roaster includes the following components:
- Roasting drum with strengthened spokes
- Exchange of the entire roasting drum (stainless-steel model) with mounted drive shaft and water injection tube
- New set of running rollers with eccentric shaft (fully mounted)
- New drum bearing with all the required wearing parts (sealing rings, locking plate)
- Installation of the components and change in the air circulation on the existing drum roaster by experienced service engineers on your premises

**Added value for the customer:**
- Energy efficiency increased by +/- 20% because of optimized energy input to the roasting drum
- Polycycle Relaxation Process (PCRP) support resulting in
  - the production of fewer fines, thus achieving a higher yield
  - a reduced risk of fat migration
- No unexpected downtime and consistent roasting quality as a result of the planned replacement
- Mechanical adjustability (tightness, radial runout) of the machine optimized, resulting in less wear
- Strengthened spokes for higher loads
Operational reliability and quality consistency. Modern systems and machine controls.

Retrofit system control

To ensure reliable production of systems in the long term, Bühler service experts recommend upgrading controls and bringing them up to date. There are convincing reasons for this – the availability of spare parts for older controls is very limited, some of the components are no longer available at all. Repairs are, if possible, very expensive and time-consuming. The same holds true for the software and its modification possibilities.

Control retrofits allow existing systems to be equipped with modern automation without prolonged interruptions to production. In the event of a fault, all the required spare parts are then available quickly and software modifications can be performed significantly more quickly.

Furthermore, customers benefit from Bühler’s round-the-clock automation service and, on request, remote support with remote diagnostics.

A further benefit – new controls make it easier to meet legal requirements thanks to complete documentation of the production processes.

**Added value for the customer:**
- Production reliability and system availability increase significantly
- Spare parts procurement is ensured again
- Easier operation
- Improved reporting system, faster fault rectification, modern data handling
- Remote support for control system and PLC possible
Overall equipment effectiveness.
Consultancy and training services.

Well-trained personnel guarantee long-term success – high availability of the plant, high efficiency and the best possible quality of the end products. Our specialists will train your employees on site, sharing their latest knowledge of cocoa and nut processing, paying particular attention to the topics of recipe optimization, potential energy savings and increased yield. The fact that your operating personnel are being trained on their own equipment ensures that your employees will have the knowledge they need to make the best possible use of the equipment in the future. Experienced process engineers also provide support to optimize existing recipes and develop new flavor options. The topics to be covered will be adapted individually to the needs of the customer concerned.

**Added value for the customer:**
- Greater efficiency and higher yields through optimum setting of cocoa and nut production lines
- Optimization of existing recipes
- Support when developing new flavor options
- Understanding of the factors that influence product quality, food safety and yield

An extensive range of training courses provides tailor-made courses for employees in the cocoa and nut industries – production employees, product developers and technologists gain the opportunity to expand their knowledge of process technology in theory-based and practical courses at Bühler. Topics include the characteristics and influences of raw materials and technological composition of the process stages such as cleaning, roasting, debacterization, size reduction and grinding. The courses demonstrate the setup and function of Bühler cocoa and nut processing machines, including technological questions, and possibilities for product optimization in all process steps, particularly for roasting.

**Added value for the customer:**
- Less production downtime and higher productivity thanks to trained personnel
- Improved product quality through optimal linking of theory and practice
Overall equipment effectiveness.
Training, service contracts, spare parts.

- **Service contracts – service and maintenance at costs that can be calculated exactly**

Service contracts with Bühler make the time required for and cost of service and maintenance measures transparent for the customer.

Inspection contracts cover regular inspection of one or more machines at your plant. All the relevant components are inspected at predefined intervals. If components are defective or if other maintenance work needs to be done, the responsible technician lets you know and advises you with regard to planning the upcoming service measures.

As part of a maintenance contract, Bühler also carries out maintenance of the machines specified in the contract. The service technician evaluates the wear and provides recommendations for spare parts. The technician repairs any damage found, immediately if possible.

A customized wear package can be ordered for every machine type. This means that wait times for ordering spare parts can be avoided. Normal operations can resume quickly.

- **Service contracts offer the following advantages:**
  - Reliable annual preventive maintenance makes for higher production safety
  - The availability of a service technician is guaranteed
  - Customers receive a detailed report with proposals for short-term and long-term measures
  - Customers with a service contract receive a discount on the hourly rate

- **Original Bühler spare parts – high quality and available worldwide**

Bühler machines are more reliable when they are fitted with original parts. This applies to mechanical and electrical spare parts as well as electronic components.

Bühler supplies these quickly to any location in the world and guarantees this through its extensively equipped spare parts depot, comprehensive distribution network and expert contact partners on site.

A further advantage of original Bühler parts is that you receive comprehensive warranty services when you purchase them.
Markets with dynamic growth often experience bottle-necks when processing cocoa beans or nuts. Bühler has taken this challenge on board and developed an extension module for the vertical roaster Barth RoaStar™, which can expand capacity by 25–30 %, depending on the existing plant type. This is achieved by adding an additional roasting zone to extend the existing roaster. The modular design of the Barth RoaStar™ allows all STT sizes to be retrofitted with this additional zone without too much effort.

**Added value for the customer:**
- Increase in capacity of 25–30 %
- Modular structure permits cost-effective retrofitting
- As the extension is vertical, an additional footprint is only required for the cyclone

**Operational and personal safety: Automatic fire extinguishing system on Barth RoaStar™**

The safety of our plants is not only a promise but something we do out of conviction. This is why Bühler provides a retrofit package with a fire extinguishing system for the successful vertical roaster Barth RoaStar™. The new fire-extinguishing system offers a high level of safety if an emergency arises and integrates system-relevant information. The optional nozzle monitoring function allows the extinguisher nozzles to be checked online, which ensures the functional safety of the extinguishing system. The additional periodic cleaning during ongoing production reduces the high-maintenance cleaning cycles when the machine is switched off.

**Added value for the customer:**
- Additional safety through the water pressure check
- Reduced maintenance outlay through leak monitoring during ongoing production
- Additional safety through the optional automatic check of nozzle function
- Automatic periodic cleaning for nozzles to provide greater safety and reduced cleaning outlay available as an option
ProValid: Validation service from Bühler.
Comprehensive service from a single source.

The aim of Bühler’s validation service is to provide documented proof that a pasteurization or sterilization process meets the previously specified acceptance criteria in practical use.

Compared to sampling, validation offers greater reliability that a process achieves the required log reduction in a proven manner and in compliance with the defined conditions. The process conditions are documented and can be used as proof for audits, for example.

Validating a process
With ProValid Basic and ProValid Premium, Bühler offers two validation packages with different service scopes. Both validation packages include a process validation based on microbiological indicators, for which non-pathogenic comparison microorganisms, known as surrogates, are used. The advantage over measuring physical parameters is that the degree of inactivation can be determined directly. The validation then focuses on the critical process parameters that achieve the required log reduction.

Elements of the validation

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<th>ProValid Premium</th>
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Inactivation rates per product sample

Log 10 reduction

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24 hours a day, seven days a week, worldwide. Services for more productivity and safety.

Bühler is the world’s leading technology partner when it comes to manufacturing cocoa and nut products. The tried-and-tested production systems combine products of first-class quality and a high level of efficiency.

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 for existing systems in the industry.

Specially tailored training options enable smooth operation of the machines, 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.

**Focus areas of the Bühler service range:**
- Food safety
- Operator protection
- Operational reliability and quality consistency
- Overall equipment effectiveness (OEE)