

## DOSING TECHNOLOGY FOR DAIRIES AND CHEESE FACTORIES





## sera

### A company of the future

**sera** is one of the world's leading companies in the field of dosing and compressor technology. For 80 years, the **sera Group** has been developing and producing application solutions that depend on the precise dosing, pumping and compression of liquids and gases.

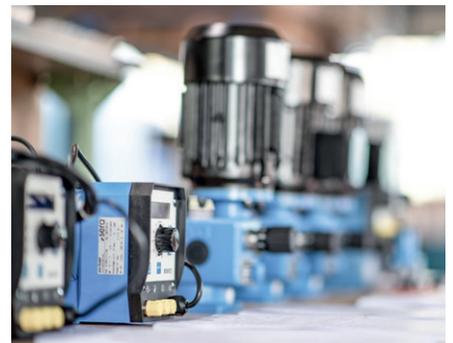
**sera** is an independent family-owned company headquartered in Immenhausen. In addition to subsidiaries in Great Britain, Austria, Switzerland, South Africa and Spain, **sera** also operates branches in Italy and the United Arab Emirates. More than 30 strong partners represent **sera** in over 80 countries, ensuring expert support, advice and services locally worldwide.

# EXCELLENCE IN FLUID TECHNOLOGY

**We create added value for people and the environment.**

As an environmental technology company, **sera** offers a wide range of products that provide the right solutions for many of your applications worldwide. **sera** products are used wherever the precise dosing and pumping of chemicals and liquids is required, for example in water and waste water treatment and disinfection.

Customised solutions round off our portfolio. In addition, our customers worldwide benefit from our comprehensive services: from support in the planning and commissioning of systems, to the quick and easy replacement of devices worldwide, to the development of innovative technologies.



## **Comprehensive product portfolio**

We create customised solutions for your application. Not only can you choose from a wide range of standard products and material designs, but you can also have customer-specific systems configured entirely according to your requirements.

## **The customer is our top priority**

Assigned, expert contact persons throughout the entire offer, order and project realisation process ensure that you receive optimal customer care and advice. We respond flexibly to your needs and are quick and reliable in our processing and handling. From engineering to production and after-sales service, we offer you high-quality products and services.

## **Long-lasting products and high quality**

For 80 years, the name **sera** has stood for exceptional quality and expertise. We develop dosing pumps and systems for extreme operating conditions and long runtimes. That is why the quality and reliability of our products are our top priority. Place your trust in the expertise and experience of our team.



## THE RIGHT SOLUTIONS FOR YOUR PROCESSES

### Our expertise for your success

Equipment and systems in dairies and cheese factories must be cleaned and disinfected regularly and reliably in order to reliably prevent unwanted germ growth, biofilms, and product contamination or carryover. Particularly high standards of hygiene, process safety, and product safety apply when processing sensitive foods such as milk and cheese. Since numerous products are marketed without subsequent preservation or with only gentle processing, the highest hygiene standards apply, especially for processing, maturing, and filling. Suitable and effective cleaning and disinfection procedures are therefore the basis for safe production and consistently high product quality.

For decades, **sera** pumps and dosing systems have been a fixed, reliable component of CIP systems in dairies and cheese factories worldwide. In addition, **sera** dosing systems are used in numerous process steps in milk processing and cheese production – from processing to targeted product treatment. The precise, reproducible dosing performance ensures stable processes and consistently high product quality.

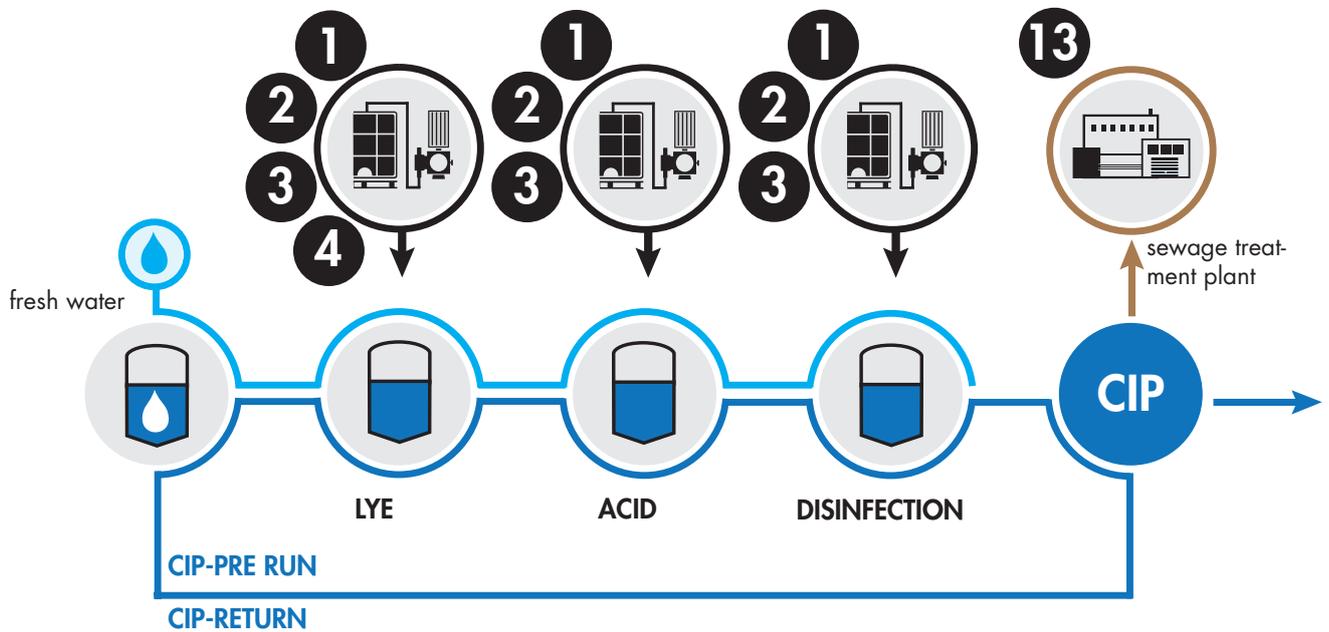


**sera's** extensive product range includes dosing and feed pumps, standardized dosing equipment and systems, and customized system and equipment solutions developed for the following applications:

- Cleaning and disinfection of tanks, pipes, and equipment (CIP)
- Dosing of food additives
- Lubricant dosing for conveyor belts
- Wastewater treatment

**sera** supports dairies and cheese factories with industry-specific, coordinated solutions that take economic and ecological aspects into account. Safe, reproducible production and cleaning processes with maximum hygiene standards are a top priority – as the basis for the production of high-quality and safe milk and cheese products.

# PRODUCTION OF DAIRY PRODUCTS

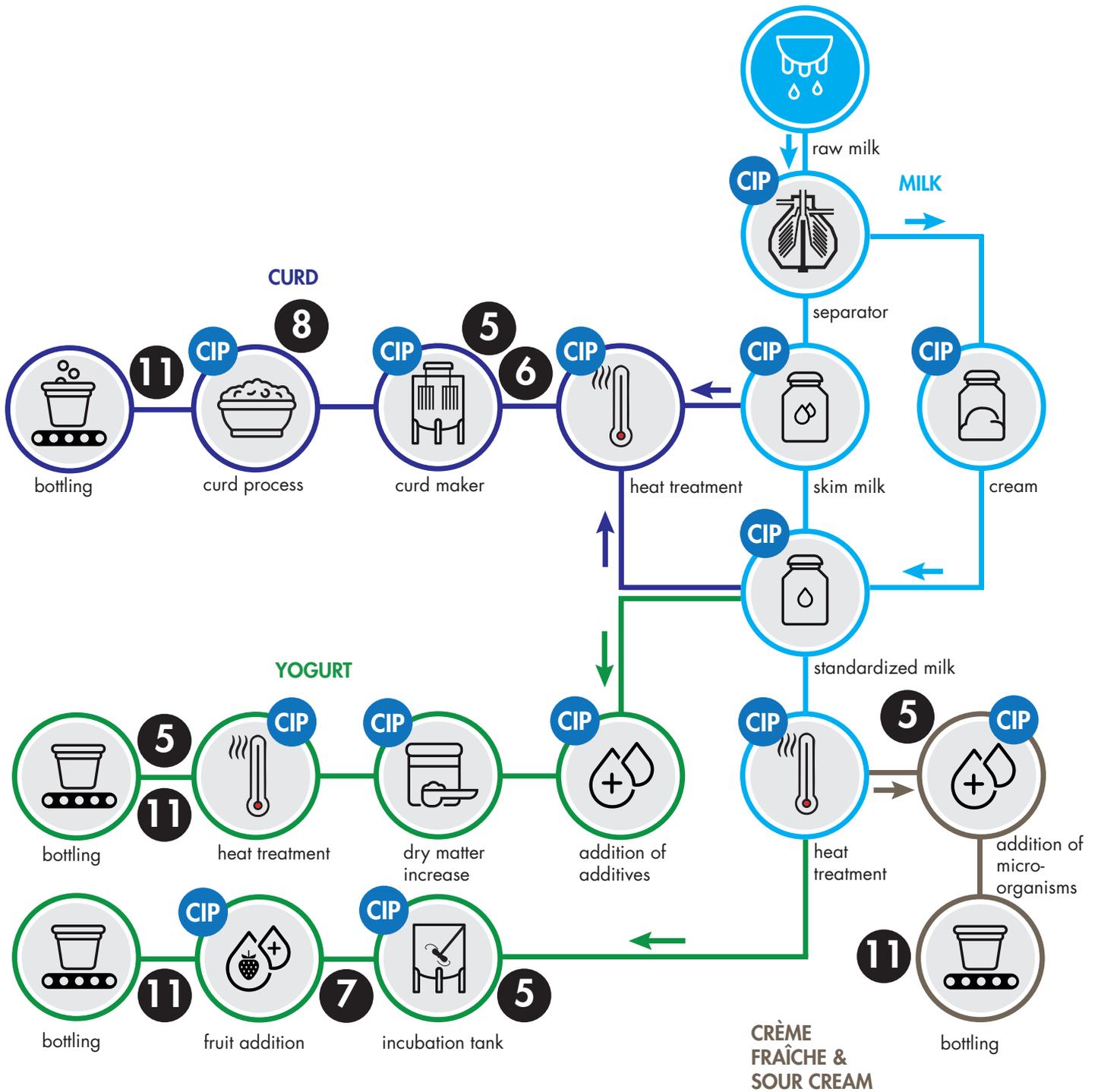


We offer a comprehensive range of products to find the optimal solution for every step of the process. Using a typical process flow for the production of dairy products and cheese, we have presented some examples of solutions from our comprehensive range:

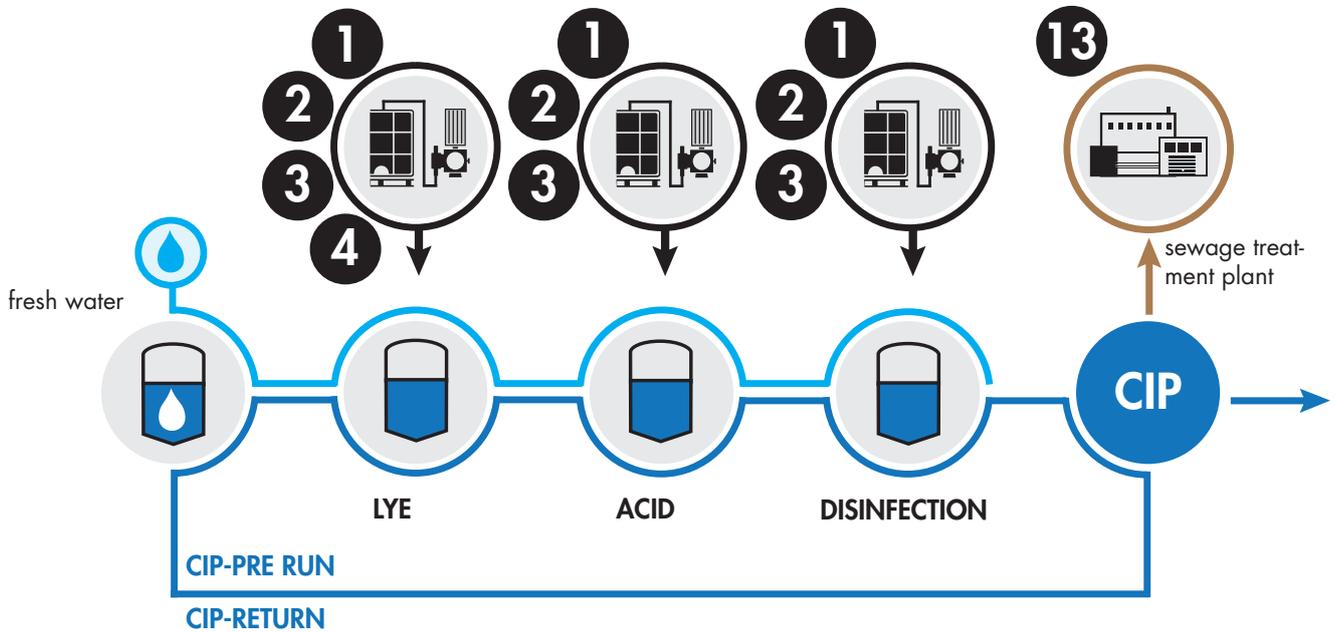
- ❶ DOSAGE OF ADDITIVES AND CHEMICALS FOR CLEANING AND DISINFECTION
- ❷ IBC EMPTYING
- ❸ REMOVAL OF CHEMICALS FROM STORAGE TANKS
- ❹ APPROACH TO CAUSTIC SODA FROM SOLIDS
- ❺ ADDITION OF MICRO-ORGANISMS

- ❻ ADDITION OF LIQUID RENNET
- ❼ FRUIT ADDITION
- ❾ DOSAGE OF BELT LUBRICANTS
- ❿ WASTEWATER TREATMENT

# THE RIGHT SOLUTION FOR EVERY PROCESS STEP



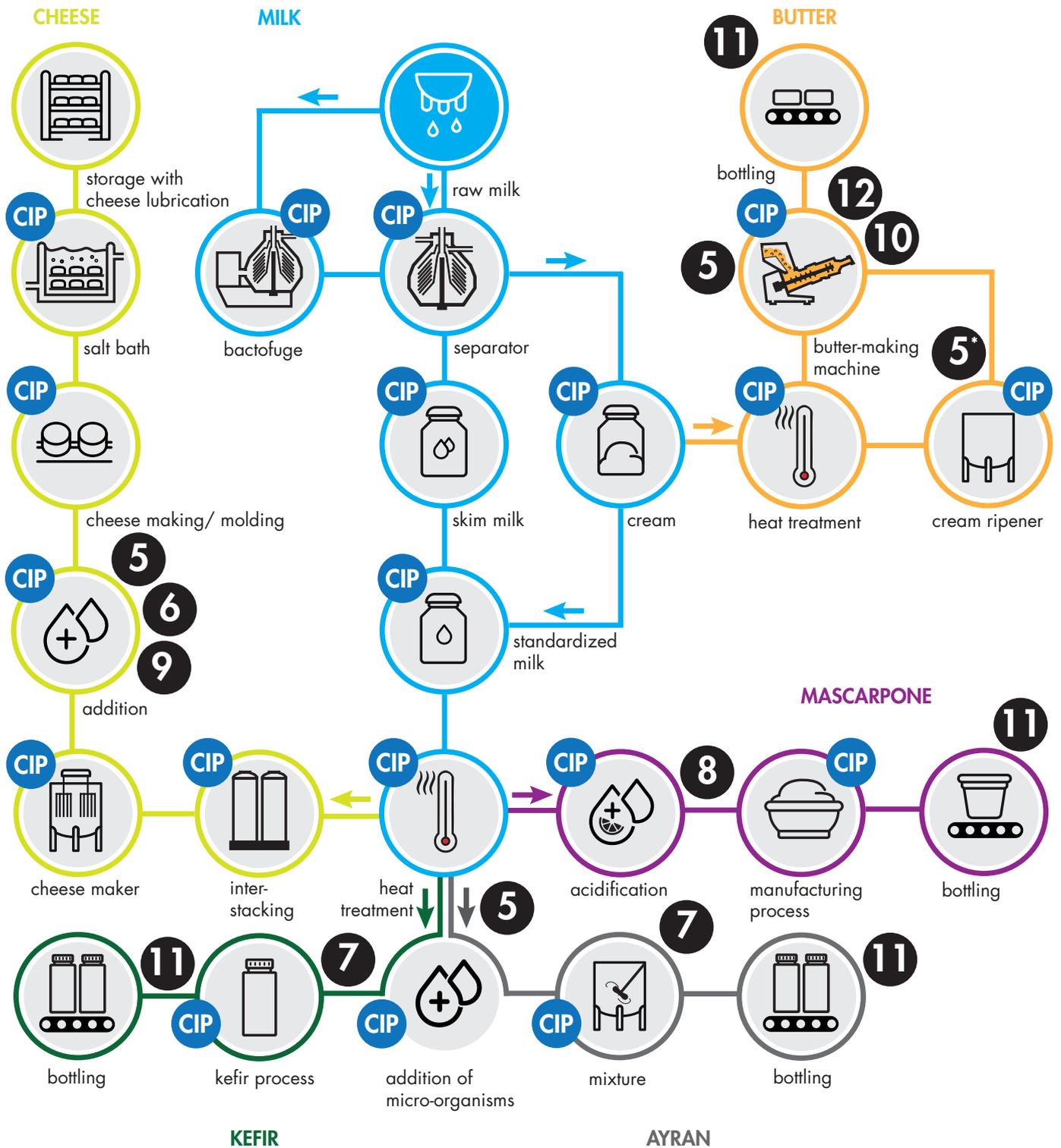
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- ❷ IBC EMPTYING
- ❸ REMOVAL OF CHEMICALS FROM STORAGE TANKS
- ❹ PREPARATION OF CAUSTIC SODA FROM SOLIDS
- ❺ ADDITION OF MICRO- ORGANISMS
- ❻ ADDITION OF LIQUID RENNET
- ❼ ADDITION OF FRUIT
- ❽ ACIDIFICATION
- ❾ ADDITION OF LIQUID AND DILUTED CALCIUM CHLORIDE AND MOLD
- ❿ ADDITION OF BRINE, BUTTERMILK, HERBS
- ⓫ DOSAGE OF BELT LUBRICANTS
- ⓬ WATER DOSAGE
- ⓭ WASTEWATER TREATMENT

# THE RIGHT SOLUTION FOR EVERY PROCESS STEP



\* Addition of microorganisms during biological cream ripening

1

The precise and reliable dosing of alkalis, acids, and disinfectants is essential for numerous secondary processes in the food industry. The standardized CVD dosing systems impress with their versatility, short delivery times, and unmatched price/performance ratio. CVD (Compact Vertical Dosing) stands for the largest modular system for dosing applications. **sera** is the only manufacturer to offer the right drive technology for every application in a configurable system.



## DOSING OF CHEMICALS & ADDITIVES



### AREAS OF APPLICATION

- Dosing of cleaning agents and disinfectants in the CIP process
- Dosing of chemicals for bottle cleaning
- Dosing tasks in the field of wastewater treatment



### FEATURES OF THE PUMPS

- Modular design allows for a wide range of variants
- Controllable pumps available on request with Profibus / Profinet
- Stepper motor pumps for precise and low-pulsation dosing



### STRUCTURE

The fully modular design allows the system's functions to be adapted to individual dosing requirements using standardized components, just like a construction kit. The CVDs are suitable for use with IBCs, drums, small containers, and storage tanks. Suitable suction lances and connections round off the portfolio:

- Compact design, modular system
- Space-saving wall mounting
- High operational and process reliability
- Options with one pump (CVD1), two pumps (CVD2), or as a compact solution CVD1s
- Suction and pressure side connection available



2

In the food industry, continuous removal of chemicals is very important—as is the cost-effectiveness of the process. **sera** meets both requirements with its IBC emptying station.

## IBC EMPTYING



### AREAS OF APPLICATION

Precise removal of chemicals such as caustic soda or disinfectants from IBCs.



### FEAURES OF THE PUMPS

- Simple design consisting of storage area and collection container
- Sloping surface ensures complete emptying of the IBC
- Once the IBC is completely emptied, a defined residual volume remains in the collection container
- Replacement of IBCs without interrupting the process
- Monitoring with level indicator and two float switches
- Improved occupational safety



### STRUCTURE

The IBC emptying station enables a continuous supply of chemicals in production processes. It consists of an inclined storage area for the IBC container, a receiving vessel, and a drip tray. Gravity causes the liquid to flow from the IBC into the receiving vessel, leaving a defined residual volume – this allows the IBC to be replaced without interrupting the process. The dosing station is placed directly on the drip tray. An additional drip tray is therefore not necessary.

3

In the food industry, chemicals are usually stored in storage tanks, centrally located in concentrate rooms. The **sera** dosing systems not only ensure that the chemicals can be removed safely and easily, but also that they are dosed precisely over long pipeline distances.



## REMOVAL OF CHEMICALS FROM STORAGE TANKS



### AREAS OF APPLICATION

Withdrawal of acids, alkalis, and disinfectants in large-scale beverage and food industry operations.



### FEATURES

- Lifting vessel on the tank
- Suction aid
- Pulsation damper
- Flow measurement



### STRUCTURE

Due to the design of the containers in the collection tray, extraction from the storage tanks, which are up to five meters high, is only possible from above. For this reason, a lifting vessel is always installed at the highest point on the tanks. In addition, the **sera** dosing systems are equipped with a suction aid. These devices enable trouble-free operation.

**sera** offers the option of manufacturing storage tanks with a volume of up to 10 m<sup>3</sup> in-house. This allows individual requirements to be implemented flexibly and high quality standards to be guaranteed.



4

When mixing caustic soda from solids, an exothermic reaction occurs with temperatures of up to 95°C.

The **sera** caustic soda preparation station is designed so that the user can easily feed the caustic soda flakes into the process from a safe distance.

## APPROACH OF CAUSTIC SODA FROM SOLIDS



### AREAS OF APPLICATION

Production of caustic soda from pellets and flakes.

In the food industry, caustic soda is the basis for thorough cleaning and therefore a prerequisite for safe, high-quality products.



### FEATURES

- Media-contacting parts made of stainless steel
- Bag emptying with screw conveyor
- Approx. 1,000 kg/h
- Level indicator with shut-off
- Electric agitator
- Temperature indicator
- Overflow with siphon
- Manual water addition
- Contact protection (surrounding pipes)

- Bag emptying separate from the hot area
- Version for big bag feeding available
- Improved occupational safety
- NaOH solutions from 20 to 50% possible



### STRUCTURE

The stainless steel container is filled with solids by a screw conveyor, which are placed into a conveyor hopper by the operator. The operator's safety is ensured by the physical distance to the hot container.

### ACCESSORIES

- Suction device
- Transfer station
- Storage container

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The **sera** peristaltic pump is used in mixing and formulation processes in dairies to precisely and reproducibly dose concentrates containing solids, such as fructose. This ensures consistent quality in milk drinks, desserts, and fermented products.

It also gently conveys highly viscous and particulate-laden media without clogging. Crystalline or viscous components can be reliably integrated into existing processes – without segregation or dosing fluctuations.

In its food-compliant design, the pump meets the requirements of the FDA and Regulation (EC) No. 1935/2004 and ensures maximum hygiene and product safety. it.



## DOSAGE OF FRUIT AND THICKENING AGENTS



### AREAS OF APPLICATION

Dosing of concentrates containing solids

### MEDIA

- Media containing solids
- Abrasive media
- Corrosive media
- Viscous media
- Shear-sensitive media



### FEATURES

- Maximum resistance to abrasion
- Unparalleled suction capacity
- Unlimited dry running
- No valves or mechanical seals
- Gentle conveying
- Dosing possible in both directions
- Full dosing control
- Food-grade design
- Dosing accuracy of  $\pm 1\%$



- 5 A hygienic dosing pump ensures the precise and safe dosing of basic ingredients and additives in dairies and cheese factories. It enables the exact addition of cultures, liquid rennet, acids, and liquid or diluted calcium chloride, thereby supporting stable and reproducible production processes.
- 6
- 8
- 9
- 10 The pump also works reliably and gently when dosing brine, buttermilk, water, herbs, or mold cultures. Thanks to its hygienic design made of food-safe materials, it is easy to clean and reliably prevents contamination.
- 12 The pump meets the strict hygiene standards of the food industry and makes a decisive contribution to the quality, safety, and consistent properties of the end product.

## DOSAGE OF FOOD ADDITIVES



### AREAS OF APPLICATION

- Dosage of basic materials and additives



### FEATURES

- CIP-cleanable pump body
- Food-compliant according to EC 1935/2004 and FDA
- SIP capability
- Dead space-optimized design of pump body and valves (hygienic design)



### STRUCTURE

- All parts that come into contact with media are made of stainless steel or other food-grade materials
- Smooth, electropolished surfaces and a special design enable thorough cleaning and prevent contamination

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In dairies and cheese factories, the dosing of belt lubricants ensures that filling, packaging, and conveyor systems operate reliably and without disruption. The lubricant is applied to the conveyor belts in precisely defined quantities to ensure consistent lubrication and minimize wear and unplanned downtime. Precise dosing is essential in milk processing and cheese production in particular, as the highest hygiene standards and safe, stable system availability must be guaranteed.



## DOSAGE OF BELT LUBRICANTS



### AREAS OF APPLICATION

- Dosing of belt lubricants



### STRUCTURE

- High-quality dosing pumps
- Suction lances for various container sizes
- Control units for quantity-proportional dosing
- Collection tray if required
- Material selection according to the media used



### ADVANTAGES

- Efficient lubrication: Precise quantities reduce lubricant costs.
- Hygiene requirements: Dosing reduces residues and germ formation.
- Extended service life: Gentle dosing minimizes material wear and maintenance costs.
- Environmentally friendly: Less lubricant means lower water consumption and less environmental impact.



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Wastewater treatment is a key component of legally compliant and responsible operations in the food industry. Organic contaminants such as fruit residues, sugar, acids, and cleaning agents must be reliably removed before discharge in order to protect the environment and resources. Efficient treatment ensures compliance with legal limits and at the same time enables cost advantages through water reuse. Professional wastewater management thus not only strengthens operational safety, but also the sustainable image of the company.

## WASTEWATER TREATMENT



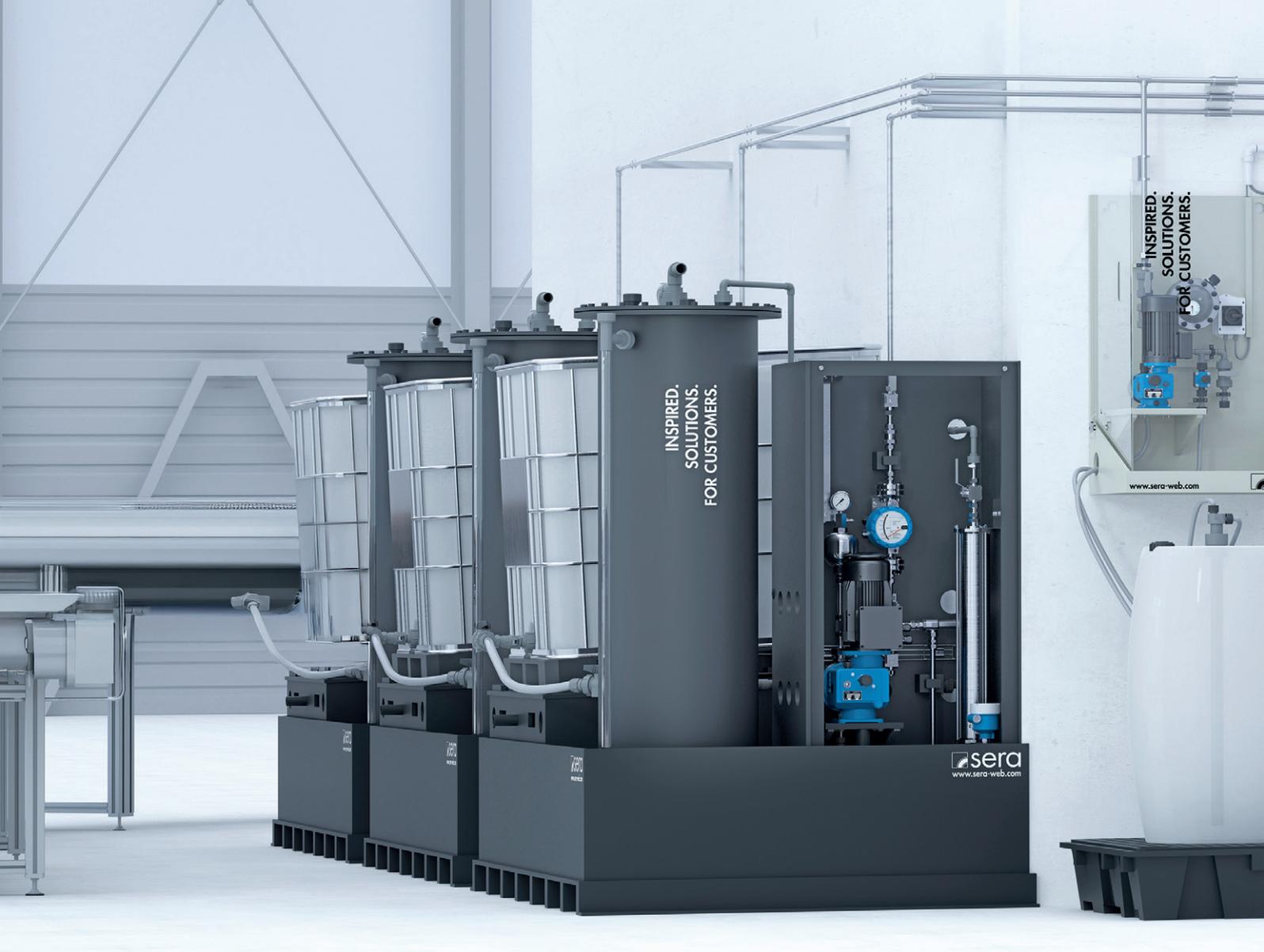
### CLASSIC APPLICATIONS

- Carbon sources for a balanced nutrient ratio
- Phosphate precipitation
- Flocculation filtration
- Sewage sludge thickening
- Sludge dewatering
- Sludge conditioning
- pH value adjustment
- Defoaming
- Desulfurization of sewage gas
- H<sub>2</sub>S elimination



### DELIVERY RANGE

- Complete dosing plants and systems
- Preparation and dosing plants for polymer solutions
- Plant accessories
- Dosing pumps



## CIP INFRASTRUCTURE REIMAGINED

### Secure media delivery at Bauer Natur

#### Modernization of the CIP infrastructure

As part of a modernization of the existing CIP infrastructure, the Bauer Natur dairy opted for a technically reorganized supply and dosing of lye and acid. The aim was to supply a widely branched pipe network with a pipe length of 80 to 100 meters with cleaning media in a reliable and reproducible manner. The requirements were demanding: cleaning takes place at 80 °C, with 50% caustic soda and 50% nitric acid being dosed. These high concentrations place special demands on material resistance, dosing accuracy, and delivery capacity. At the same time, different performance ranges of 1,000 l/h and 3,000 l/h had to be reliably mapped.

#### CIP in dairies – reliable cleaning in a closed circuit

In dairies, tanks, pipes, and process components are cleaned using the CIP (cleaning in place) method. Cleaning is carried out in a closed system without dismantling the plant components. The cleaning process follows a defined sequence: pre-rinsing with water to remove product residues, removal of organic residues using lye, intermediate rinsing with water, removal of mineral deposits using acid, and final disinfection after another water rinse. In addition to the defined concentration of the cleaning media, the temperature, exposure time, and flow conditions in the piping system are particularly important for the cleaning effect. Especially with long pipe runs, sufficient flow capacity is necessary to ensure turbulent flow and thus complete wetting of the surfaces.



### The technical implementation

Four dosing systems were installed on wall dosing pallets, each with splash guards for safe and maintenance-friendly integration into the existing infrastructure. Centrifugal pumps with a delivery rate of 4,000 l/h are used to achieve the required delivery rates. In addition, motorized diaphragm pumps ensure precise dosing in the lower output range. The cleaning media are supplied as required and are integrated into the higher-level plant control system.

The newly structured CIP infrastructure has clearly defined the dosing and feeding of the cleaning media in technical terms. The system ensures stable and reproducible delivery of the cleaning media across the entire pipe network. The result is a durable, reliable solution that permanently meets the high hygiene requirements in a dairy.



# SERVICE FROM THE MANUFACTURER – FOR PERMANENTLY AVAILABLE SYSTEMS

## Maintenance, testing and further development for safe, predictable operation

The **sera** service ensures that your systems are operated reliably, safely, and economically in the long term. Structured maintenance, standard-compliant tests, and targeted analyses help to avoid unplanned downtime, make costs predictable, and prevent efficiency losses at an early stage.

### Maintenance and testing – compliant with standards, plannable, manufacturer-approved

#### Our maintenance and testing services include:

- Maintenance of sera systems, pumps, and valves
- Maintenance of third-party units and fittings
- One-time maintenance or structured maintenance contracts including price advantages on replacement and wear parts

- Option for extended warranty upon commissioning by **sera**
- Inspection of tanks and piping systems for wear and static service life
- Annual, legally required inspections in accordance with WHG and AwSV by a specialist company
- System check in accordance with DGUV V3
- Risk assessment
- Inspections for early detection of wear
- Free on-site appointment for technical inventory
- Free quotation based on this

### Technical development for changed processes

When processes change or systems need to be modernized, **sera** provides support with technically flawless,



reliable adjustments tailored to existing systems and future requirements:

- Conversion and expansion of existing dosing systems
- Adjustment of pipelines, e.g., after pump replacement
- Elimination of leaks in pipelines
- Retrofitting of valves and flush connections (clean & safety)
- Modernization of older systems to increase operational safety

#### **Repairs with analysis of causes**

- In-house repair of pumps and valves
- On-site repairs by experienced service technicians
- Fault and process analyses in the event of malfunctions
- Use of original parts for long-term operational reliability

#### **Support and training – so that expertise remains within the company**

- Competent analysis of your plant technology
- Spare parts service with fast response times
- Technical telephone support
- User training for safe and efficient plant operation
- Customer training for the safe selection of the right technical solution for each process step

The result: reliable technology, predictable costs, and a partner who looks after your plants at every stage – so that your operations run safely, efficiently, and without disruption.



# SETUP AND COMMISSIONING – COMPLETELY FROM A SINGLE SOURCE

## From installation to safe operation

Technical systems can only deliver long-term performance if installation, piping, and commissioning are precisely coordinated. The **sera** service team takes care of every step—clearly coordinated, professionally executed, and consistently tailored to your processes.

### Installation and tank integration designed as a complete system

- Installation of plants and systems
- Positioning of storage tanks
- Professional connection of the tanks to the plant technology
- Ensuring that the entire structure is ready for operation

### Commissioning that anchors knowledge in the company

- Functional testing of all components
- Parameterization and fine-tuning of the plant
- Practical training of operating personnel
- Imparting knowledge for safe operation and fault detection

The goal is not only to start up the plant, but also to permanently anchor the necessary process understanding in the company.



### Pipe installation as an integral part of the system

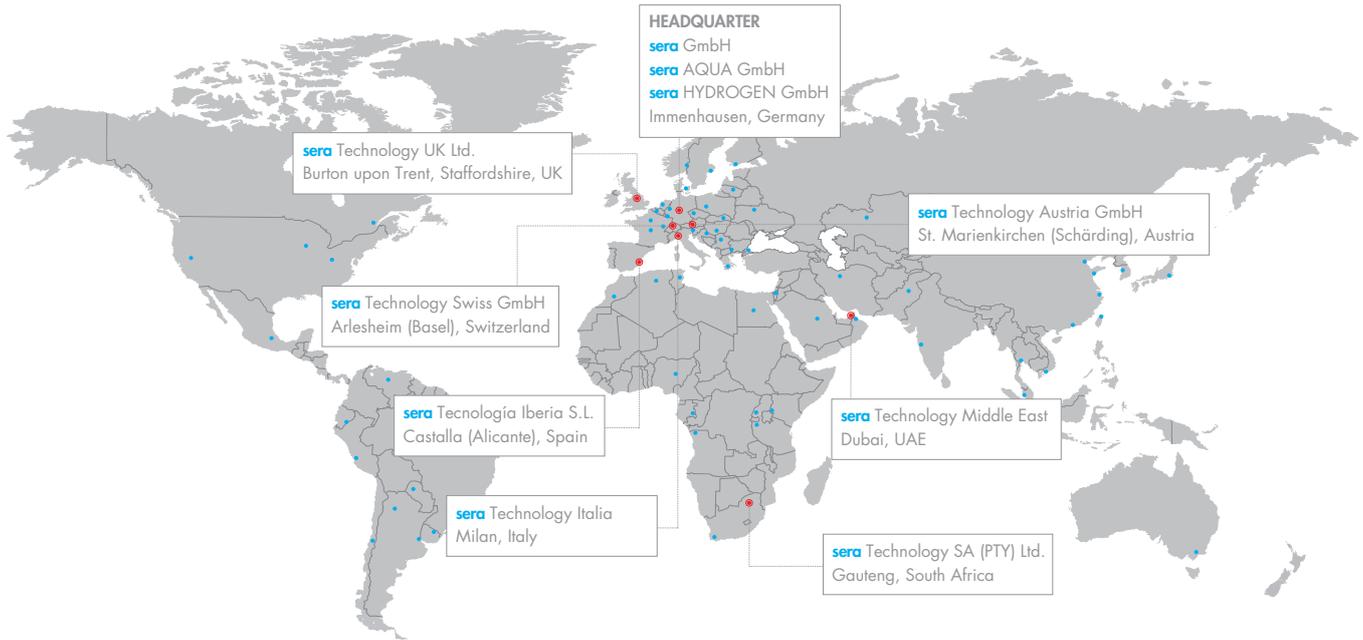
**sera** implements all piping variants:

- Plastic pipes: single-walled, double-walled, or with inliner
- Piping with trace heating
- Stainless steel pipes with clamp ring fittings
- Media-compatible design from the plant to the dosing point
- Hosing for flexible requirements

In doing so, **sera** not only takes current operating conditions into account, but also maintenance accessibility, expandability, and long-term operational safety. Each piping system is planned and implemented as an integral part of the overall system.

The result: stable, safe, and efficient dosing processes – from day one.

FOLLOW US



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