



PRODUCT OVERVIEW  
DRYERS & MIXERS



**PHARMA**



**CHEMICAL**



**FOOD**



**COSMETICS**



**ENERGY**

## Welcome to the HEINKEL Drying and Separation Group

The **HEINKEL Drying and Separation Group** is one of the few suppliers of complete system solutions for processes in solid-liquid separation. More than 2.000 customers all over the world benefit from our solutions for over 5.000 applications in the chemical, fine chemical, pharmaceutical and food industries.

The history of the **HEINKEL Drying and Separation Group** started back in 1884 with the foundation of the Grotz Maschinenfabrik in Bietigheim near Stuttgart, Germany. Since then we have continuously extended our knowledge and expertise, and considerably influenced innovations in the process industry.

### The Brands of the **HEINKEL Drying and Separation Group**



**COMBER**  
Drying and Filtration Technology



The brands **COMBER, BOLZ-SUMMIX, HEINKEL** and **JONGIA** provide expertise in filtration, centrifugation, mixing, agitating and drying. The knowledge transfer between the members of the corporate group enables us to develop well-thought-out and turn-key solutions for our customers. The solutions are the basis of your innovative power – the basis for the development of significant future technologies. Our philosophy means we do not just deliver machines but also offer our customers a reliable 360° service.

We accompany and support you from the test phase in our lab centers through commissioning and launching the system to production. With comprehensive after sales service, we ensure the constant, sustained high availability and reliability of your production facility. For a continuously optimal product quality. For your success.

## Conical Screw Vacuum Dryer

### Series MF 010 - MF 1200 (100 - 12,000 liters)

The BOLZ-SUMMIX conical screw dryer is a vacuum contact dryer. Due to its contained closed system and indirect heating of the product it is particularly suited for drying hazardous and toxic products to a very low final moisture content. As a result of its unique, very gentle mixing character, even mechanically sensitive products are not destroyed. The product quality after the drying process is reproducible and as good as that of the initial product, whereas the driving forces required are very low. The achievable, high endvacuum ensures low drying temperatures which is a clear advantage when drying temperature-sensitive products. It also ensures good heat transfer rates and short drying times, while at the same time requiring only little energy. The short drying times and the high containment level of the fully closed system make the conical dryer the best choice in instances where environmental and/or product requirements are strict and remarkably high.



- > Fully closed contained system
- > Very high containment level, almost 100% solids and solvent recovery
- > Operator safe, product and environment friendly
- > Wide product flexibility as well suited for multi-product/ multi-process application
- > High process flexibility in the range of drying, mixing, homogenizing, re-wetting etc.
- > Very gentle product handling
- > Optimized CIP facilities with complete liquid drain and verified CIP reproducibility
- > Short drying times given by a minimized screw-to-wall clearance
- > Improve of the product quality and reduction of the drying time by use of a heated mixing screw
- > Almost 100% product discharge by gravity
- > Filling volume 10-100% of working capacity
- > Low drive power compared to other systems
- > Reliable drive systems with proven sealing system
- > Safe and ATEX compliant
- > Clean room installation in the feed area or the dryer discharge area is possible
- > Various options and design details



## Conical Screw Mixer

Series SF 010 - SF 3000 (100 - 30,000 liters)

The BOLZ-SUMMIX conical screw mixer works according to the proven principle of a rotating mixing screw being guided along the wall of the conical vessel at constant close distance by means of an orbital arm. The product flow maintains an intense yet gentle mixing and product displacement. Suited for demanding bulk solids of the pharmaceutical, chemical and food industries, it ensures a unique and gentle mixing process.



- > Gentle but still effective mixing process
- > Small drive power without mechanical or thermal product demolition by wear/attrition
- > High mixing result and efficiency, perfect blending and good mixing time
- > Unique suitability for a wide range of industrial products with various character like density, particle size and shape, proportions etc. without risk of segregation
- > Maximum flexibility with just partial load from 10 to 100%
- > Well suited for multi-product application and frequently changing product volume
- > Central, unrestricted and residue-free product discharge with a homogeneous product flow
- > Good cleanability with a complete and residue free drain of cleaning fluids

## Conical Screw Cooker

Series DF 050 - DF 600 (500 - 6,000 liters)

Mixing, stirring, cooking and sterilising are basic operations in food production and processing. The BOLZ-SUMMIX cookers with their conical construction and rotating mixing screw, have proven particularly useful for processing natural products such as coffee beans, cocoa nibs, gluten or nuts such as chestnuts. Various processes can be realised such as a heat treatment process by direct steam injection and heated jacket with continuous mixing, injection/absorption of process liquid, cooking and sterilising as well as extraction of components.



- > Short process time with gentle and effective product mixing and intensive heat transfer
- > Injection of steam via a ring channel
- > Vacuum and pressure rated equipment
- > Total drain of solid and liquid in a short time
- > Flexible hence suited for a wide range of products, process and heat treatment
- > Quick adding of required process liquids

## Cylindro Conical Mixer Series CCM (100 - 20,000 liters)

The Cylindro Conical Mixer CCM with a central shaft agitator is a batch mixer for more standardized mixing applications with rather low TCO (Total Cost of Ownership). With its robust central-shaft agitator it is pricewise an alternative to the conical screw mixer and besides powder/bulk solids also suitable for pasty products. Due to its compact design the mixer is particularly suitable when space is limited, especially for a narrow room height.



- > Short mixing times because all product of the batch is permanently in motion
- > Speed of the helix mixing element can be adapted to the process needs
- > Useful working volume from 15 - 70% of the gross volume
- > Adjustable clearance between helix/blade and vessel wall or bottom outlet
- > Wide range of applications for powders, liquids and pastes
- > Very good discharging
- > Shaft sealing and bearing are installed outside of the mixing chamber
- > ATEX design and EHEDG compliant design

## Cylindro Conical Dryer Series CCD (100 - 20,000 liters)

The Cylindro Conical Dryer CCD with a central shaft agitator was developed to be used both as a dryer (e.g. for filter cake) and also an evaporator when products have to pass a critical phase change from fully liquid to final bulk solid. The robust mixing element is showing its effective performance also during liquid and high viscous pasty phase to finally achieve the desired solid phase. As a dryer it is designed with a vacuum-/pressure rated vessel, heating jacket and integrated dust filter. Like for the CCM also the CCD offers a big advantage with a compact and space saving design.

- > Short drying times because all product of the batch is permanently in motion thanks to a heated helix agitator (optional)
- > Uniform heat distribution during the process without cold spots
- > Variable speed of the helix agitator for optimum product quality
- > Useful working volume from 15% to 80% of the gross volume
- > Suitable for powders, liquids and pastes
- > Very good discharging
- > Very good heat transfer (high k-values)
- > Shaft sealing and bearings installed outside of the drying chamber
- > ATEX design and EHEDG compliant design





## Laboratory System BS-miniDRY Series DKL015 (1.5 liters)

Especially for the simulation of complex processes and production steps in research and development, BOLZ developed the BS-miniDRY. Thanks to its compact design and ready for "plug and use" it is simple to install and flexible to use. Identically designed like a bigger production scaled conical screw dryer, it is perfect for product trials and scale-up. A wide range of drying and mixing process steps can be simulated by making use of the flexible filling volume, already starting with a feed of only 150 ml.

- > Mobile, compact and easy transport design
- > Easy installation „plug and use“
- > Designed to fit into a ventilation booth
- > Flexible filling volume 10 to 100%
- > Ideal for „scale-up“ calculations
- > CIP-cleaning included
- > Possibility for various changes of the agitator tool (from orbital arm system to various central shaft agitators)
- > Designed as a complex process system or also as a reduced economical version



## Pilot Plant BS-pilotDRY Series ML001 - ML010 (10 - 100 liters)

The pilotdryer BS-pilotDRY from BOLZ is well suited for a wide range of various pilot-scaled trials and tests within the product and process development, but also for ongoing quality monitoring of a production. Mainly used as a traditional conical screw dryer, in addition it can also be used as a central shaft dryer. The hybrid stirrer technology allows drying and mixing processes to be simulated and tested in only one appliance using different mixing tools. Therefore relevant comparisons are possible which facilitate the selection of the most suitable stirring mechanism or agitator tool for the product and thus for the future production equipment.



- > Mobile and portable skid design
- > Simple „plug and use“ installation
- > Complete process unit with ancillaries
- > Flexible filling volume 10 to 100%
- > CIP-cleaning included
- > All product contact surfaces heatable
- > Suited for a wide range of processes
- > Ideal for „scale-up“ calculations
- > Optional with central shaft agitator



## Common Ancillary Process Equipment



### Vacuum unit with solvent recovery system

The process vacuum pump may be supplied as a liquid-ring vacuum-pump with gas ejector or a dry running vacuum pump. It is turnkey modular skid designed, complete pre-piped and pre-wired, with a suitable vacuum-condenser and storage tank for collection of solvents.

### Customized heating & cooling unit

Heating and cooling units are used for indirect heating and cooling of the dryer jackets (and agitator tool) via a secondary loop. Suitable for hot water, thermofluid HTF and steam. The units are pre-piped and pre-wired in a turnkey support skid.



## Used Machines / Rebuilds / Retrofits

The HEINKEL Group offers economic solutions for its customers providing a large and constantly changing range of used machines which are available quickly at an attractive price, including warranty. The machines are being completely disassembled, comprehensively checked and reassembled according to customer requirements. Damaged parts are replaced by original spare parts of the latest design. Documentation is updated to match the as-rebuilt status.

Additional equipment for used machines, upgrades and retrofits can be fitted and integrated into the control system. Subsequent optimizations, also for third-party manufacturers, make it possible to adjust the customer's systems to changed process requirements as well as safety and validation standards.





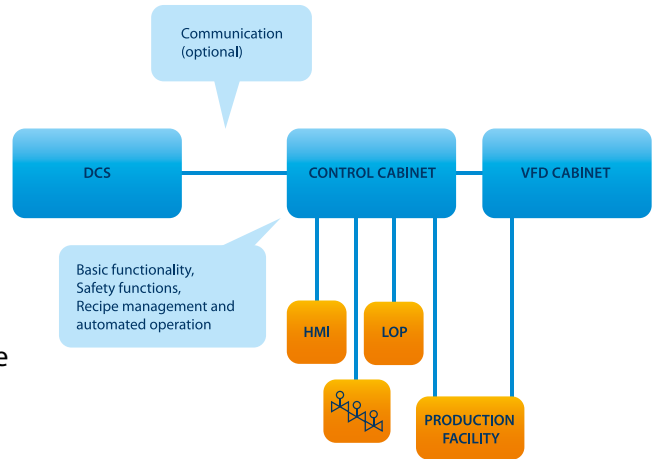
## Automation

### Tailor-made software for each application

With decades of experience and expertise, the HEINKEL Group offers tailor-made system components and software upgrades – individually set-up and optimized for the customer's application.

### Upgrade from Siemens S5 to S7/ TIA

The migration of the control system Siemens SIMATIC S5 to Version S7/ TIA makes it possible to use the latest functions of process control technology and increases the productivity of the system.



The upgrade ensures the continuity of control investments made to date, increases the efficiency of the machines and provides a cost efficient extension of the life cycle of the machine.

The modern technology reduces the risk of machine downtime and reveals optimization potential. The HEINKEL Groups carries out the upgrades and thus increases the reliability of the production process of their customers.

## Service

### The HEINKEL Group does everything to ensure success – anytime, anywhere.

For decades now, the HEINKEL Drying and Separation Group has been committed to precision and reliability in filtration, centrifugation, mixing and drying technology. With know-how and innovative power, the group develops components and complete system solutions for specific applications of solid-liquid separation in the pharmaceutical, fine chemical, chemical, cosmetic and food industries.

The HEINKEL Group offers integral service - from the development of the perfect solution through commissioning and training to maintenance, spare part service and 24/7 support.

Tailor-made pilot units for new developments ensure the competitive capacity of the customers. The basis of common success is cooperative collaboration. It results in top performance that finds acclaim all over the world.

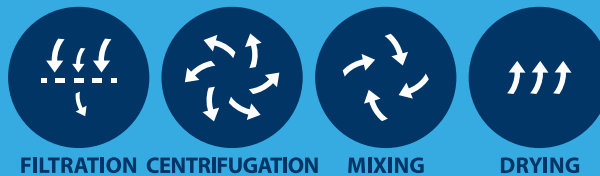
The constant striving for quality and perfection is part of the corporate culture. Something the HEINKEL Group works for in all areas at full strength day in, day out. Regular training sessions and further education measures ensure the achievement of the high procedural and legal requirements of the pharmaceutical, chemical and food industries.



## Technical Data – valid for all machine types

Temperatures	Orbital system: Operating temperature 160°C Central shaft: Operating temperature 240°C
Pressure	Operating pressure: -1 bar up to +6 bar (10 bar ESP explosion shock proof design, different pressure acc. customer requirement)
Materials	Stainless steel such as: <ul style="list-style-type: none"><li>&gt; AISI 304</li><li>&gt; AISI 316L</li><li>&gt; AISI 316</li><li>&gt; AISI 904L</li><li>&gt; Hastelloy C22</li></ul>
Surface finish	Product contact – fine polish / electro-polish Externals – sanitary polish / glass blast bead
Variations	Optimized versions and specialized details for chemical and pharmaceutical application or according customized requirements
Rotary shaft seals	From single- or multiple lip seal assembly to dry, gas-purged or liquid quench, non-contact lift-off mechanical seals. Preferred in a safe and quick change cartridge design.
Regulations/ Standards	<ul style="list-style-type: none"><li>&gt; European PED Pressure Equipment Directive with AD-2000 calculation</li><li>&gt; ASME and ASME Code VIII</li><li>&gt; GB150</li><li>&gt; SELO</li><li>&gt; SVDB</li><li>&gt; CODAP</li><li>&gt; JIS</li><li>&gt; GOST certificate</li><li>&gt; GMP and cGMP</li><li>&gt; FDA</li><li>&gt; REACH regulation</li><li>&gt; ATEX / NEC / CEC / IEC</li><li>&gt; TA Luft (air quality control)</li></ul>
Options	<ul style="list-style-type: none"><li>&gt; Diverse sensors for temperature and pressure monitoring</li><li>&gt; Sampling valves (also with containment)</li><li>&gt; Filling and discharge valves</li><li>&gt; WIP / CIP / SIP nozzles</li><li>&gt; Filter with reverse jet cleaning</li><li>&gt; Heating jacket / insulating jacket</li></ul>

**SALES & SERVICES WORLDWIDE**



**FILTRATION CENTRIFUGATION MIXING DRYING**

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