

Bolz-Summix®

Conical Mixers & Dryers



Markets

- Pharmaceuticals
- Chemicals
- Food
- Dairy
- Cosmetics
- Minerals
- Metals
- Others

Applications

- Mixing & drying
- Heating & cooling
- Sterilizing & cooking
- Addition or injection of liquids
- De-aeration
- Vacuum/Pressure conditions
- Granulation & agglomeration
- Crystallization



www.bolz-summix.com



summix®
MEMBER OF THE MPE GROUP



Bolz-Summix® member of the MPE GROUP

The Multi Processing Equipment GROUP is the holding company of 5 international operating companies with the focus on development, manufacturing, supply and outstanding service of high quality components and installations of processing equipment and systems.



MPE GROUP companies:

- | | |
|---------------|--------------------------------|
| ■ Bolz-Summix | Solids mixing & drying systems |
| ■ Jongia | Stirring & mixing equipment |
| ■ Van Meurs | Bag-in-box filling systems |
| ■ Techno-G | Solids handling & processing |
| ■ Terlet | Process systems & equipment |



Why a conical mixer or dryer?

From the 1930's onwards the conical mixer has conquered the world to be used for many different applications in many industries, and for good reasons. Due to its design the conical mixer/dryer incorporates several important features such as:

High mixing accuracy

A mixing accuracy of 1:100.000 can be achieved. Even products that have different bulk densities and particle shape can be effectively mixed to the required mixing accuracy in the conical mixer. Because of the high mixing accuracy small quantity additives such as active materials can be evenly mixed in larger batches.

Low shear mixing

The mixing principle is a proven low shear agitation of the product, resulting in a low energy consumption with gentle product mixing. Yet mixing is intensive and mixing times are relatively short.

Suitable for cohesive products

Due to the friction and pressure amongst the product particles when agitated these will be separated and evenly mixed even in case of cohesive products.

Variable product filling (turndown)

The mixer/dryer is effective from a 100% filling level down to a 15% filling level, without changing the process characteristics.

Full bore bottom discharge

The bottom discharge equipped with our ball segment valve provides a full bore discharge with no with obstructions due to a free hanging cantilevered mixing screw.

Closed sanitary design

The mixer itself is a fully closed design. Also all connections including feed and discharge are permanent. Therefore all safety requirements are met, for both product and the environment.

Multi-purpose!

Because of its versatility the conical mixer/dryer is used for a wide variety of applications; especially all kinds of processes take place in a closed and controlled environment, for pharmaceutical, chemical and other products. Addition and extraction of volatiles under vacuum or overpressure conditions and various biochemical processes are just some examples.

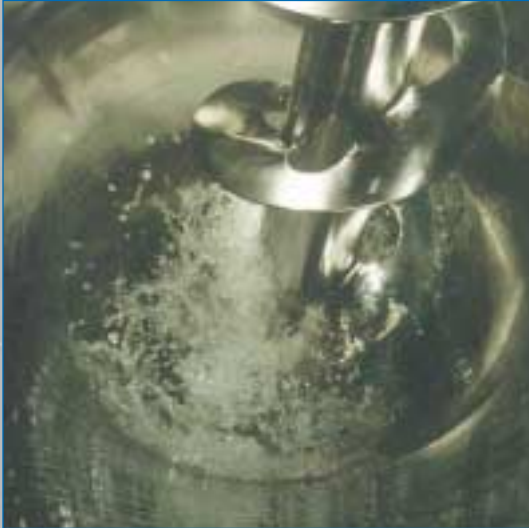
The conical Bolz-Summix multi-purpose processor might be the answer to your production requirements.



Applications

Mixing

At a pharmaceutical company Bolz-Summix supplied a conical blender installation for a new production facility processing a new hormone-based product. The main objective of the



installation is a controllable and reproducible loading and blending of materials to obtain a uniform granulate ready for tableting. Containment is a key issue because of the nature of the product. Therefore, special solutions are generated by Bolz-Summix for handling and mixing the hormone-based products, including cleaning of the complete installation. Additionally, regulatory demands require a reproducible, controlled and documented process according to GAMP guidelines issued by the FDA.

Food processing

A coffee roasting firm wanted to extract caffeine from coffee beans without removing any other essential constituents and without damaging the beans. The requirements laid down for the reliability and ease of cleaning, as well as the need to process large batch volumes under constant conditions led Bolz-Summix to propose a tailor-made system capable of dealing with extreme conditions such as vacuum, steam injection and water addition at high temperatures.

Drying

A fine chemicals manufacturer was looking for a dryer installation as the final process step before discharging the product in big-bags. To justify the investment required for the conical dryer

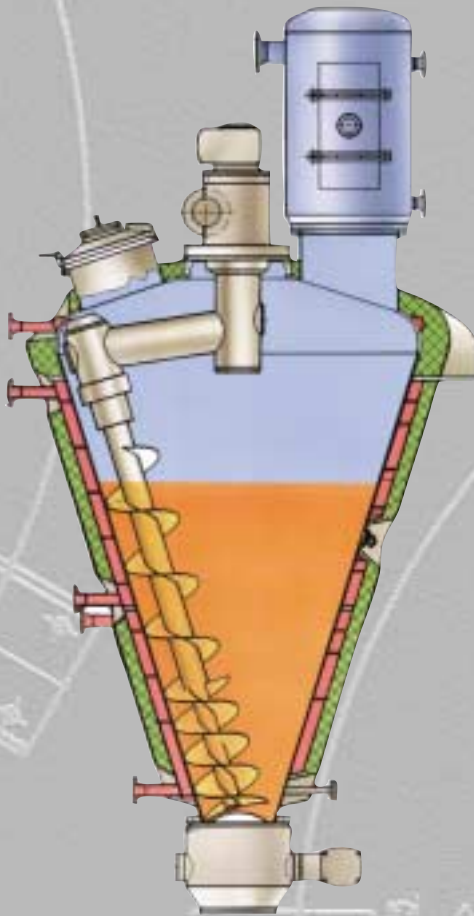


installation, the customer first completed several drying tests using our pilot units, and together with our process engineers, the required capacity of the new plant was determined. As the drying time was critical, a heated internal cone was selected to enhance drying by increasing the heat transfer area and mixing intensity. Apart from the dryer our scope of supply also included a vacuum and solvent recovery unit, heating and cooling unit, clean in place system, feeding and discharge system, and process control system. In addition, the process line had to be designed to meet the high standards of product integrity, whilst maintaining hygienic conditions, with no risk of any contamination. Reliable and proven drive design and special seal solutions for drives and ball segment valves are standard in the Bolz-Summix product portfolio to meet the customer requirements. Also the experience in containment technology for handling and discharging hazardous powders makes Bolz-Summix a qualified supplier for powder processing plants. After considering the options, the manufacturer selected a fully automated Bolz-Summix mixer/dryer processing unit – a top-quality, tailor-made solution.



Drive systems

The Bolz-Summix conical mixer/dryer retains the well proven principle of a rotating free hanging, cantilevered mixing screw suspended from an orbital arm, following the periphery of the cone wall, ensuring an intensive and gentle mixing action for powder and pastes. The complete driveline comprises a top drive system with separate electrical motor for the mixing screw and orbit arm. Ease of maintenance has been one of our main considerations when designing the Bolz-Summix conical screw blenders. Our cartridge designs for seals and bearings, together with a robust design for drive and orbitarm ensure a maximum performance and minimum down time of your production. The drive system can be either a bevel gear design or a timing belt design. Both are well proven technologies with a large number of installed equipment. Each design has its own unique characteristics, advantages and range of applications.



Bevel-gear type

The power transmission from the mixing screw drive motor to the mixing screw is realised by means of grease lubricated bevel gears (oil-free).

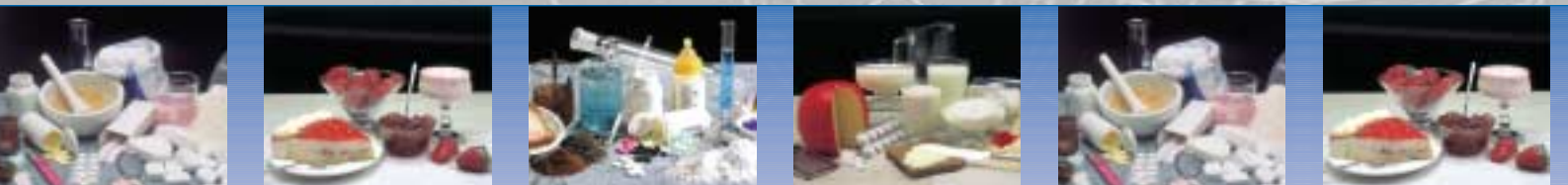
- Special seal solutions available in cartridge design
- Safety chamber and detection for seal leakage
- Traditional shaft-bevel gear designs for drive
- Cylindrical heated screw to reduce drying time



Belt-drive type

The power transmission from the mixing screw drive motor to the mixing screw is realised by means of a timing belt (oil-free).

- Cartridge design for both screw seal and bearings
- Main seal as cartridge located outside of the vessel
- High speed – low torque principle for drive
- Tapered screw for increased mixing intensity



Mixer & Dryer options

As Bolz-Summix we have an extensive range of options available to meet our customers demands. From the basic single mixer and dryer to the most extensive system, Bolz-Summix will be your partner!



Flexible seal solutions

- Lip seals (non) and split execution
- Mechanical seals:
 - dry running or lift-off
 - wet lubricated
 - liquid barrier system
 - gas monitoring system
 - split execution

Filter

- Sintered metalweb or textile filter
- Top or side door
- Reverse jet cleaning
- Filter cartridge or filter bags
- Safe change system

Shaft options

- Heated screw
- Heated internal cone
- Liquid injection
- Disperser
- Orbit arm positioning
- Rotation detection
- Nitrogen purge
- Clean in place

Vessel Design

- Pressure Equipment Directive (PED)
- ASME / U-Stamp
- cGMP
- Heating/cooling jackets
- Insulation
- Electropolished/glass blast bead
- Hastelloy, Titanium, others

Instrumentation / Safety

- Temperature probe
- Pressure transmitter
- Rupture disc
- Blanketing system
- Level control

Process control systems

- Control cabinets
- Safety & Interlocking
- Recipiee execution
- Scada visualisation
- Data recording
- Validation & GAMP

WIP / CIP / SIP

- Pharma Ribbon type screw
- Static and rotating spray balls
- Torus ring
- Retractable spray lance
- Automatic cleaning machine
- Liquid drain nozzles/system
- Cleaning by reflux-condensation

Miscellaneous

- Bottom bearing for mixing screw
- Ball segment valve for product inlet/outlet
- Nitrogen purge ring
- Dead spot bottom product recycle
- Lump breaker
- Sample taker
- Inspection port
- Sintered steam inlet at cone
- Equipment suitable for use in hazardous Ex-zones

Please contact us should your required option(s) not be listed here.



Vacuum Drying Systems

The conical screw dryer is a contact dryer and due to the closed design and the indirect heating of the product particularly suitable for drying hazardous and toxic products involving solvents or water, to end moisture level less than 100 ppm or better. The solvents can be fully recovered in the integrated vacuum unit. The high vacuum level that can be achieved results in low drying temperatures, a benefit to heat sensitive products, and low energy consumption. The short drying times and the high level of containment for this system make this dryer installation your best choice when environmental and/or product requirements are high.



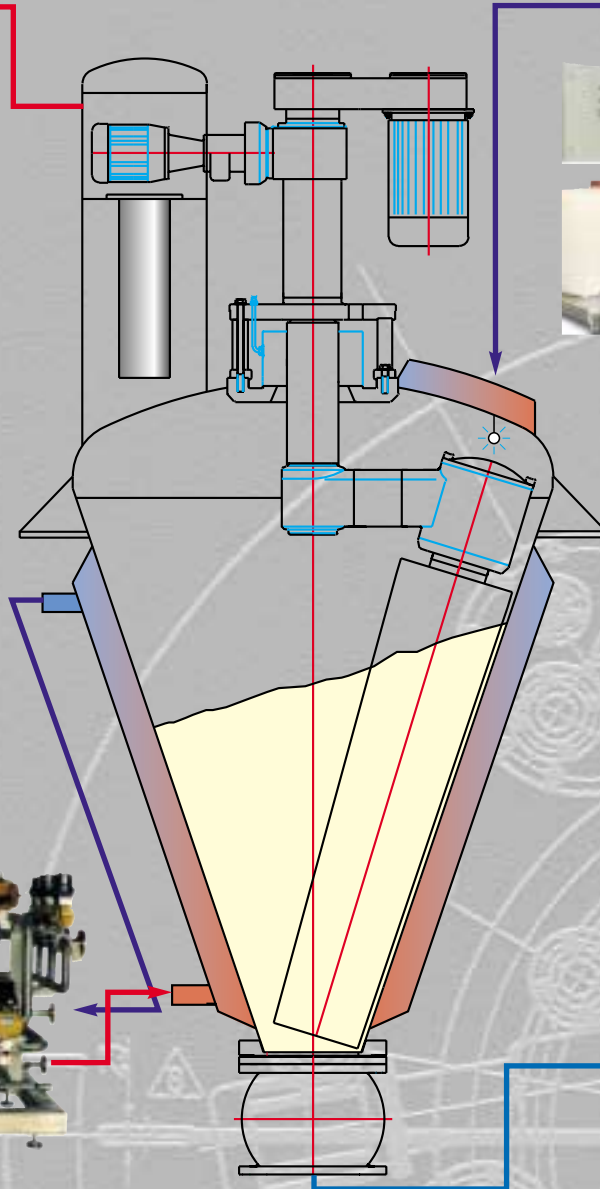
Vacuum and solvent recovery

- Liquid ring pumps
- Dry running pumps
- Condensers
- Receivers
- Instrumentation
- Control of vacuum level



Heating/cooling systems

- Indirect or direct steam heating
- Cooling with prime or chilled water
- Thermal oil or glycol utilities
- Closed secondary loop
- Instrumentation and temperature control
- Reflux-cleaning facility



Clean In Place systems

- Once through design
- Recirculation and CIP vessels
- Heat exchangers
- Chemical feed systems
- Instrumentation, flow meters, conductivity, turbidity
- Spray devices
- Intelligent cleaning robot

Containment systems

- Sample isolators
- Enclosures & Isolators
- Filling & Weighing
- Discharging & Weighing
- Laminar/cross/downflow booth systems



Laboratory and Pilot Units

Laboratory tests are indispensable for the development of new products, scale-up trials and ongoing quality monitoring of production output. The comprehensive know-how gained over the years in the development of large-sized conical screw dryers has been successfully transferred to the manufacturing of Laboratory and Pilot equipment. Portable test equipment and in-house facilities, ranging from 15 liter upto 175 liter, are also available to assist our customers in selecting the right equipment and process conditions, and scaling up of different mixing and drying applications.



Applications

- True scale simulations
- Scale-up trials
- Optimising process parameters
- Laboratory scale testing
- Pilot scale testing
- Research and development
- Monitoring product quality
- Pre-production batches
- Small batch production

Processes

- Mixing
- Homogenising
- Vacuum drying
- Cooking
- Wetting
- Coating
- Granulating
- Dedusting
- Sterilising
- Etcetera

Standards mixer

- Sizes 15, 30, 50, 100 and 200 ltr
- Infinitely variable speed drive
- Sanitary cGMP design

Standards dryer

- Heating and insulation jackets
- Dust filter
- Vacuum and condenser system
- Solvent recovery

Features

- "Plug and play"
- Mobile unit
- Reduced transport height
- User friendly
- Self-contained system
- Committed to flexibility
- Cone and cover splitted for inspection, maintenance and cleaning
- Conical vessel can be set down to give free access to vessel internals

Options

- Heated mixing screw
- CIP systems
- Sample taker
- Liquid injection
- Bottom injection ring
- Mechanical seals
- Sizes upto 200 ltr
- Tapered or sanitary ribbon screw
- Lump breaker
- Local control panels and electrical wiring
- Instrumentation
- Data recording
- Pressure rated vessel design
- Tailor made skid and support frames
- Etcetera



Range bevel-gear type model code

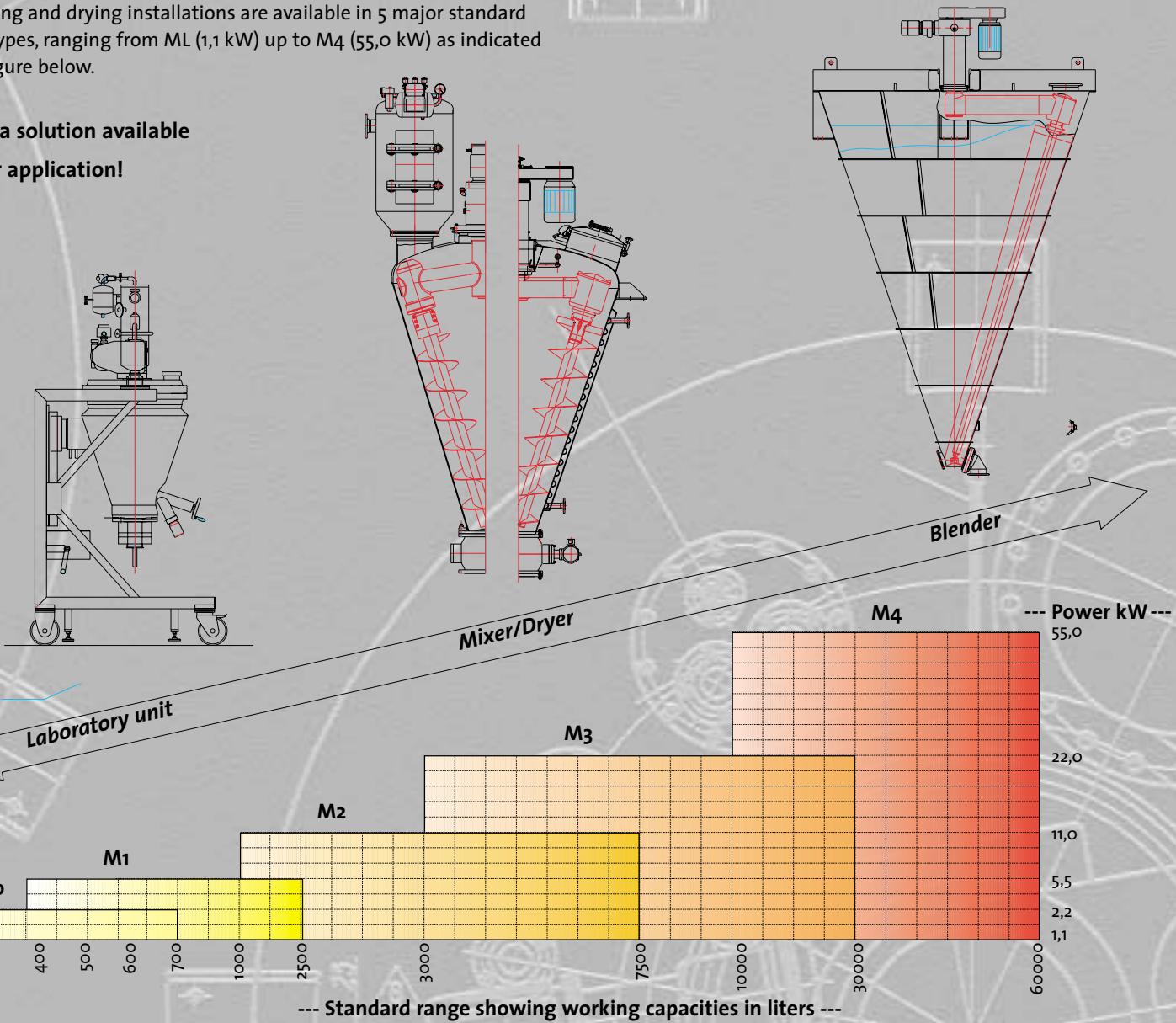
Type ML	15	50	ltr.	Laboratory mixers & dryers
Type MF	100	6.000	ltr.	Dryer-Free cantilevered screw
Type MKF	500	7.500	ltr.	Mixing-Free cantilevered screw
Type MKB	3.000	30.000	ltr.	Blender-Bottom supported/driven

Range belt-drive type model code

Type FF	200	30.000	ltr.	Mixer installations
Type FB	5.000	60.000	ltr.	Blender installations
Type DF	200	20.000	ltr.	Dryer-Free cantilevered screw
Type DB	3.000	30.000	ltr.	Dryer-Bottom bearing screw

The mixing and drying installations are available in 5 major standard design types, ranging from ML (1,1 kW) up to M4 (55,0 kW) as indicated in the figure below.

**Always a solution available
for your application!**



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