LÖDIGE
PROCESS TECHNOLOGY

System Solutions for the Chemical Industry

LÖDIGE – ALWAYS THE RIGHT MIX

Chemical Industry: essential, innovative, responsible – No Life, No Prosperity, No Growth without Chemistry

Most important criterion for the user in reaction and drying technology is an optimum process solution, which also includes energy, environmental and sustainabilty considerations.

Solutions by Lödige

Lödige offers machines and systems for the following applications
- Mixing
- Granulating
- Multi-Stage-Processing / Single Pot Processes
- Reacting
- Drying
- Pyrolysis processes

We deliver product specifically adapted mixing and processing systems meeting the highest demands for best product qualities, long term availability and economic production.

We find chemical products everywhere in daily life

Efficiency and quality of these products are continuously improved. But there still is the question: Is this variety of chemical products safe for man and environment? The answer: This can only be guaranteed by responsible handling – and there is a wide consensus in industry about this. Nowadays, product responsibility is an important part of each business strategy.

Considering their total life cycle, chemical products save more than twice as much climate-relevant emissions as occurred during their production. Reputable studies prove this. And on top of that: A lot of climate friendly technologies would not be possible without these products: solar cells, wind power plants, electric cars, thermal insulation and waste water treatment only work with chemistry.

The chemical industry produces more than 30.000 different materials – from basic chemicals up to custom-made starting materials for various familiar applications. More than 80 % of these products are delivered as pre-products to customers in other industrial fields. The chemical industry is an essential cornerstone to secure the capability for innovations. Other main industries rely on this.

Lödige Reacting and Drying Systems – Quality and System Reliability from the very beginning

This optimum can only be achieved if sufficient experience, reliable scale up data from pilot tests and – in cooperation with the user – sufficient feedback from production results are permanently fed back into innovative new and further developments. Lödige have been working on the basis of these criteria for decades.

And what is more – Lödige are pioneers in the thermal treatment of bulk goods with DRUVATHERM® Reactors and Dryers.

The invention of the Ploughshare® Shovel made it possible to use the Lödige hurling and whirling principle, which increases the specific reaction surfaces, to achieve drastically reduced processing times in dryers and chemical reactors.

The Lödige mixing process – known among experts as a mechanically generated fluid bed – minimizes temperature and concentration gradients in the reaction bed during the mixing, reaction and drying phases and increases heat exchange through the reactor walls.

You will find detailed descriptions of our systems in our brochures about machines and controls.

Constructive Cooperation leads to optimal system solution

Optimum process solutions adapted to individual products and coordinated to product rheology with regard to apparatus size, consumption figures and materials are the basis for a long-term constant high level of quality.

Lödige achieves this allround quality through
- consequent process design
- comprehensive basic engineering
- specific design of the DRUVATHERM® reactor or dryer as the heart of the system

Additional units – such as choppers in various forms – support the reacting and drying processes in the different process phases.
Because of the demands made on seals, Lödige cooperated with a well-known seal manufacturer to develop the specific technical solutions for these sealing systems.
Auxiliary units and systems are optimized and adapted to the main unit to achieve an economic complete system solution.

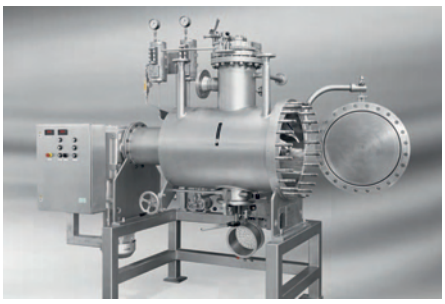
One of the main reasons for our competence is our philosophy of developing and verifying solutions in intensive cooperation with the users.

The framework is formed by a large range of Lödige process solutions in a flexible system, which makes it possible to fulfill application-orientated, performance-related, specific customer process requirements.
Multistep reaction and drying processes using
- vacuum
- overpressure
- thermal and mechanical energy

can thus be carried out in one DRUVATHERM® apparatus.

Process conditions for a wide product range can be set with high precision, so that Lödige dryer and reaction systems are able to guarantee exactly reproducible, constant and operationally safe process sequences.

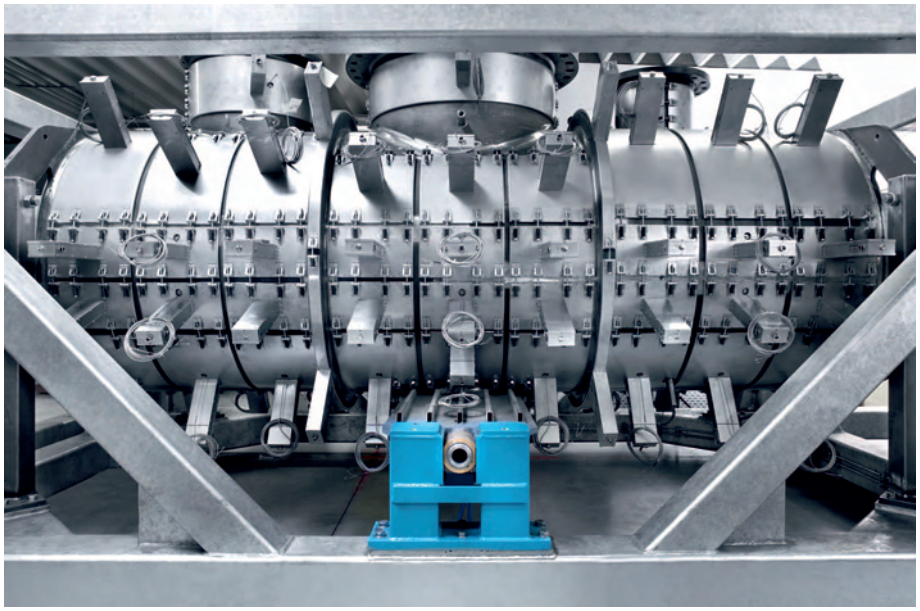
DRUVATHERM® DVT 300 for drying pharmaceutical products



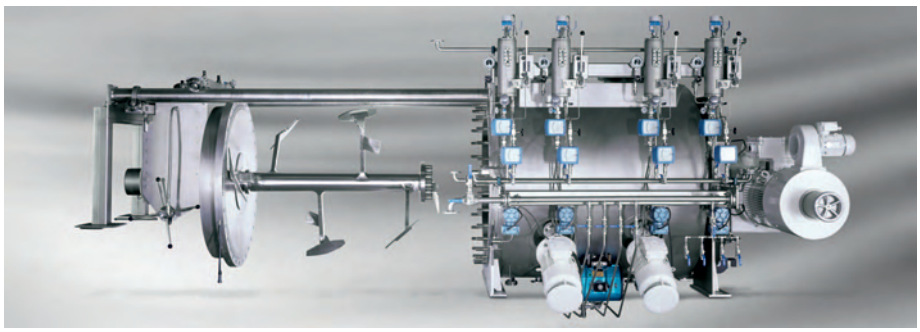
DRUVATHERM® VT 600 with a bearing at one end of the shaft

DRUVATHERM® DVT 20000

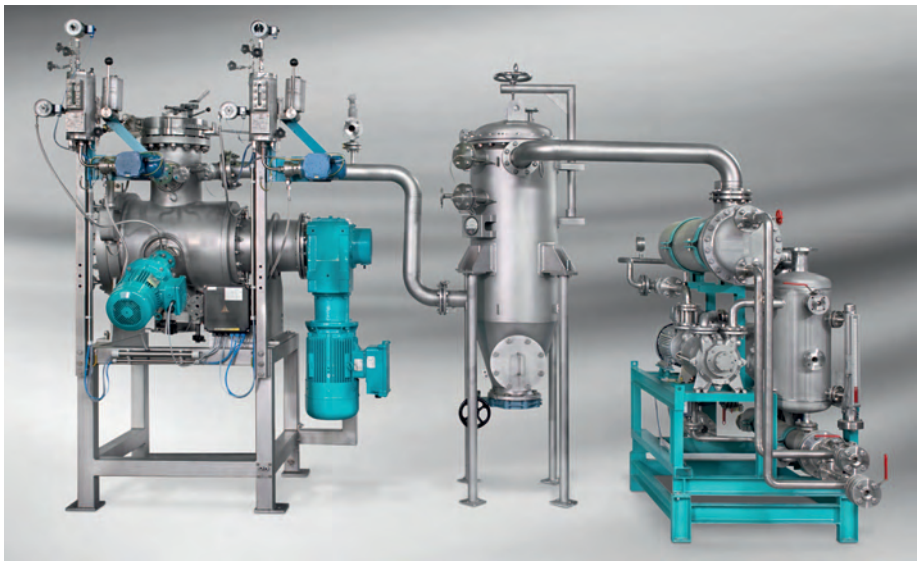
Special Applications require Special Solutions



DRUVATHERM® High Temperature Dryer HVT 4200



DRUVATHERM® Vacuum Dryer VTA with fully extractable shaft



DVT 130 with vacuum unit

Due to the high technological standard Lödige can offer reaction and drying processes for special application areas within the following parameters:

- Temperatures up to 750° C
- Vacuum down to 10^{-8} mbar
- Pressures up to 50 bar

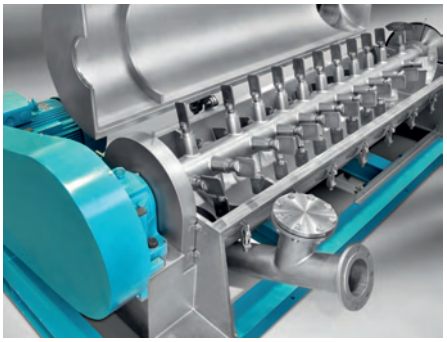
These remarkable parameters for industrial standards result from the determined innovation of Lödige DRUVATHERM® apparatus which have been used for years for various applica-tions without problem:

- Production of all cellulose ethers – such as CMC, MC, HPMC etc.
- Solvent drying in vacuum of sensitive pharmaceutical intermediate products and special chemicals
- Continuous stripping and drying of solvent-containing polysaccharides
- Contact / convection drying of chemical products, fibres and moulding compounds
- Production of starch, guar and tamarind derivatives
- Dextrinization of starch
- Cooling and granulating of methyl cellulose
- Drying of anode sludge

Continuous processes – the high skill of processing

CoriMix® CM is a versatile and robust mixing and granulating system for a wide range of applications. High reliability, compact design with high specific throughput as well as long life and low maintenance are the convincing advantages of this system.

The system is based on the high peripheral speed of the mixing mechanism of up to 40 m/s, the resultant centrifugal force forming a concentric annular layer of product. The system offers the possibilty to divide the mixing chamber into zones of different shear intensity, thus permitting system optimization for varying product properties. The required residence time for the product can be influenced by adjusting diverse parameters. High troughputs are achieved in particular in the fields of mixing, moistening, densifying, granulating, dispersing and agglomerating. The CoriMix® CM System is used in all sectors of chemical industries.

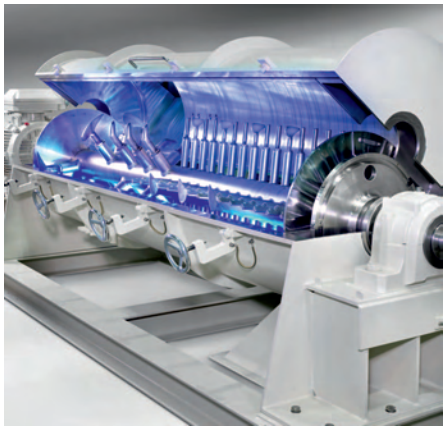


CoriMix® CM with special mixing shaft

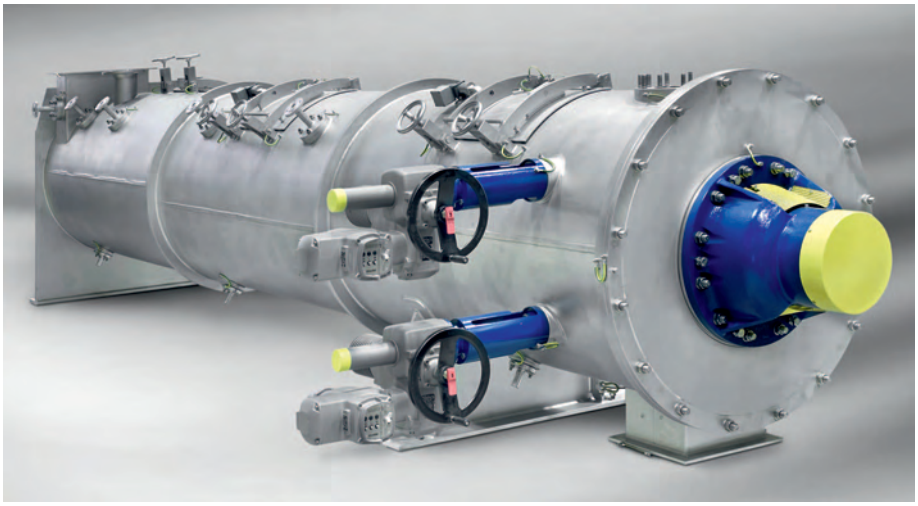
CGT 3500 with adapted peripherie

The DRUVATHERM® CGT Dryer is used as a granulating dryer for continuous operation under atmospheric conditions.

The special feature of this dryer is, in addition to the continuous operation, the possibility to combine convection and contact drying. Due to the long residence time, products can be dried at low temperatures to protect them. At the same time excellent granulation can be obtained.
By using two CGT dryers, a combined stripping/drying process can be run. In this way the residual solvent is kept to a minimum and the high cost of inert gas/circulation drying is avoided. This process is used, e.g. for pectines or polysaccharides.



CoriMix® CM 700



DRUVATHERM® CGT 6200

We work for the Brands of chemical industries. Our service ensures maximum availability of the systems.

The illustrations show some of non-standard features available as special, additional equipment. We reserve the right to modify the machine construction in the interests of technological development and progress.
The QM-System of Lödige has obtained the DIN ISO 9001 certification. Lödige has certification for the registration of pressure vessels at the National Board, USA, ML registration by Chinese „Centre of Boiler and Pressure Vessel Inspection“ and certification “Korean Manufacturer Licence” for the supply of pressure vessels.

Qualified service is vital – particularly for technologies where high quality must always be guaranteed.

The extent of service has to be defined specifically as part of supply.
Lödige provides comprehensive advice and project support:

- Installation supervision and control
- Operation and maintenance training of personnel
- Mechanical and process related start-up
- Process optimization for new tasks
- After Sales Service on inspection of apparatus / systems and advice on spare parts storage
- Maintenance contracts

And on top of this:
We can offer you the services of our Test Centre. You can test your products and processes in our Test Centre, work on further development or develop something totally new.
Lödige are the experienced and competent partners for the successful development and operation of your plant.

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Lödige supplies high-grade components, subsystems and systems for technical processing applications in a wide range of industries. We are specialized in the field of mixing, granulating, coating, drying and reaction. Our profound knowledge of processes, development and production enables us to contribute to the success of our partners throughout the world.

Lödige, which was founded in 1938, is a family-run business in its third generation now.
With the invention of the Ploughshare® Mixer, Lödige created a mixing unit that can cover a wide range of different processing tasks. This unit forms the basis for numerous innovations in the area of mixing and processing technology.

Industrial mixing and processing technology has been significantly influenced by Lödige and will continue to be so in the future.
Over 500 patents and more than 30,000 machines and systems demonstrate our experience with customer-oriented system solutions. Lödige operates with more than 300 employees worldwide and supports its customers with a network of subsidiaries, technical offices and agencies.

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