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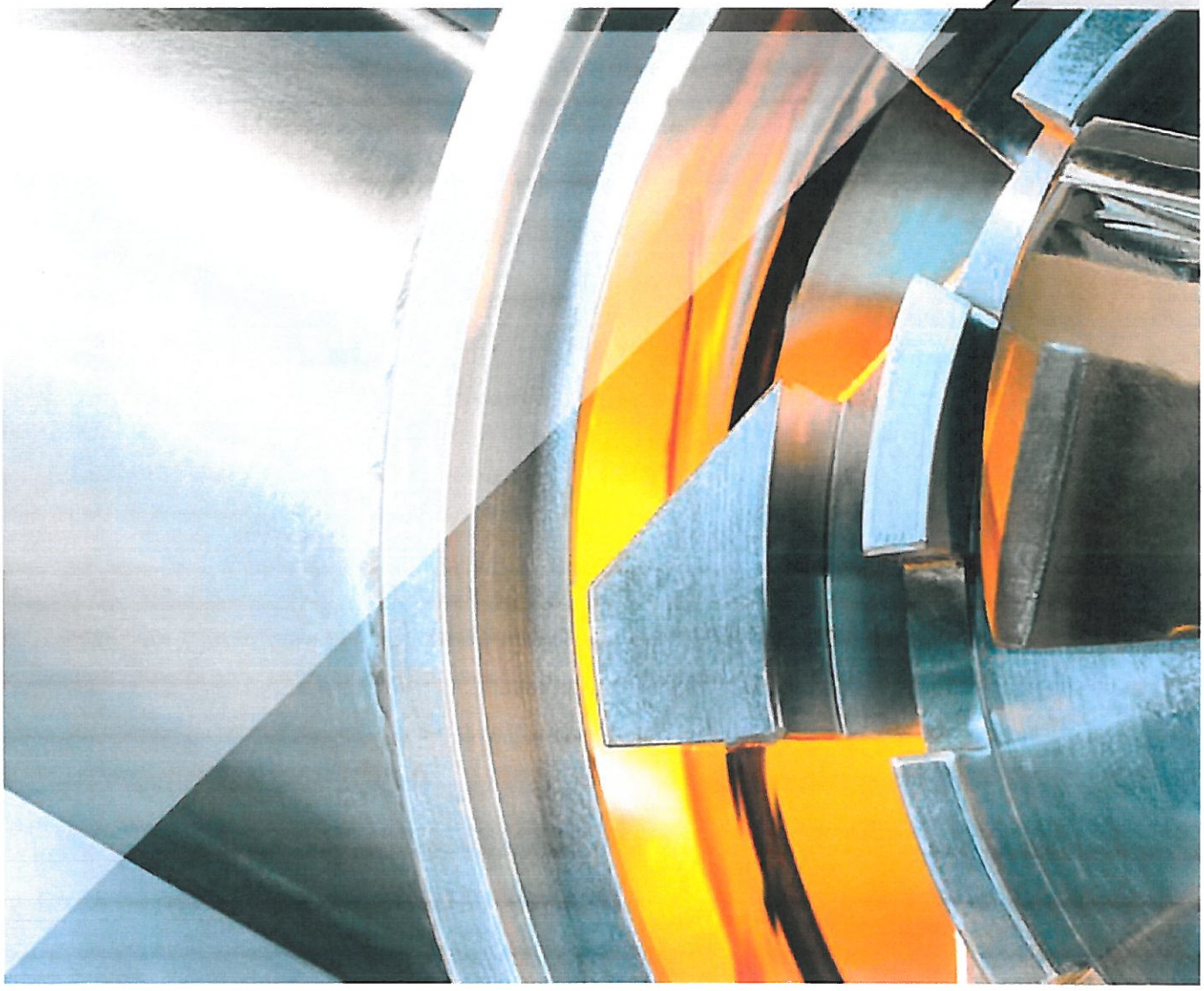
FrymaKoruma Dinex

Vacuum processing unit for the cosmetics and pharmaceutical industries



Vacuum processing unit

The FrymaKoruma Dinex is the proven system of choice for the production of creams, lotions, gels, ointments, toothpaste and other kinds of dispersion. The special requirements that must be satisfied for the manufacture of parenteral, pulmonary, peroral and percutaneous dosage forms are met by the Dinex machine and associated automation concept in every respect. This concept is based on an external process tool with recirculation and provides an ideal platform for precise processing of products spanning a very wide viscosity range.

At the heart of the system is a rotor-stator homogenizer, which is mounted underneath the process vessel and connected to its top part by a recirculation line (long loop). This configuration ensures that all ingredients pass through the homogenizer at least twice before being discharged, because ingredient materials are introduced through the running homogenizer. The homogenizer also incorporates the internal pumping function for circulating and discharging the products and cleaning the machine. The new homogenizer – which significantly improves the Dinex' performance – is a particularly exciting innovation.

The scraper agitator supports the top-down macro-mixing of the product in the vessel that is produced by the long-loop recirculation line. At the same time, it guarantees optimal thermal transfer between the vessel wall and the product during the heating and cooling cycles. The recirculation line can optionally be branched into the conical bottom section of the process vessel while the machine is operating. This short loop permits batch sizes with a larger variability and allows foaming products to be circulated underneath the surface.

The new Dinex homogenizer

- has a 10 % better shear rate,
- produces smaller droplets (D50 value ≤ 300 nanometres) and a narrower particle size distribution,
- introduces less heat into the product,
- achieves optimal emulsion results faster.

Like the processing unit, the automation concept has a architecture that leaves nothing to be desired. Three ba concepts are possible according to the individual requi of the application. Various modules and functions can b controlled and integrated, depending on the concept se

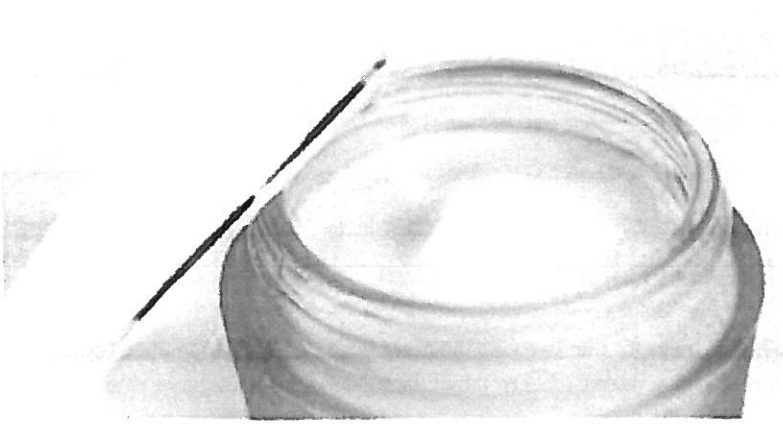
The Dinex is offered in two different versions, to enable vacuum processing unit to be aligned to each custome specification:

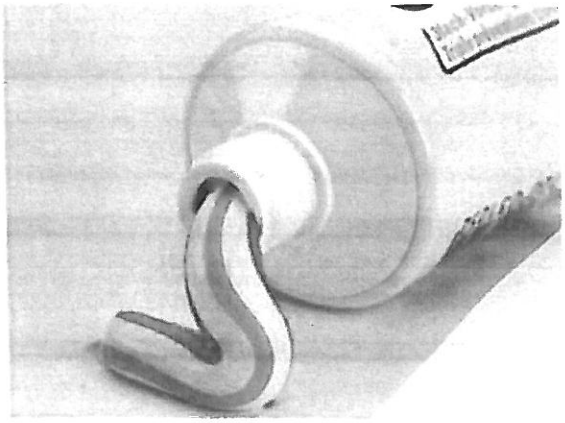
The Dinex V has a vertically mounted homogenizer, wh be operated in dispersion or pumping mode, dependin position of the stator. In order to switch between shear and shear-free operation in this way, the rotor and stat to be moved apart. At the same time, a defined shear e input can be optimized and monitored thanks to the pr speed control.

The Dinex H features a horizontal homogenizer arrang The shear energy can be varied within a defined range ing the speed. The pumping efficiency of the process tc es proportionally. The horizontal design facilitates high feed rates and a lower machine height.

Homogenizer Dinex V (sterile version)

Homogenize





Standard version

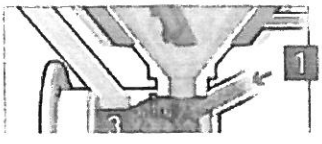
- Pressure vessel with safety device and scraper agitator
- Powerful vacuum system
- Rotor-stator homogenizer with integrated pumping function
- Double jacket for heating and cooling with insulating jacket
- Temperature control
- User friendly control/visualization
- External recirculation line (long or short loop)
- Full CIP capability

Options

- Vertical or horizontal homogenizer arrangement
- Counter-rotating agitator
- Shaft seal or mechanical seal concepts
- Lid lifting device
- Three automation levels and additional modules
- Load cells and dosing units
- Comprehensive validation documentation
- ATEX / US-EX compliance
- Sterile versions
- Other options on request

Applications

- Lotions, creams, gels
- Ointments, pastes, syrups
- Toothpaste
- Decorative cosmetics
- Haircare products



Key benefits

Shorter batch cycles

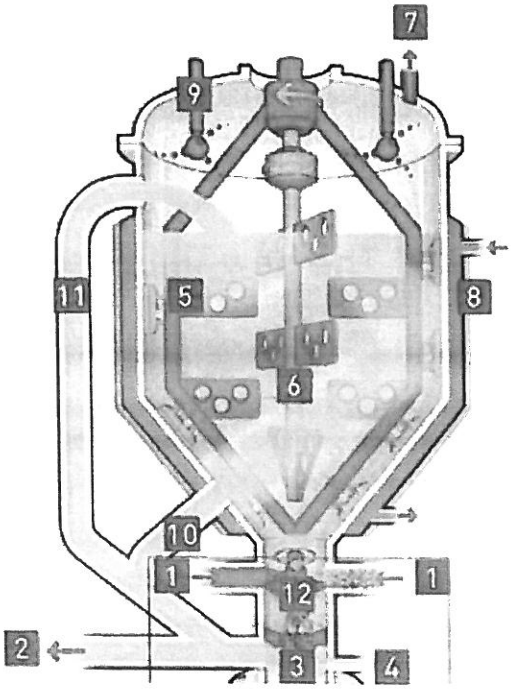
- Rapid feeding of dry materials
- Efficient homogenizer with shear energy optimizat
- Defined homogenizing passages
- Optimal control and monitoring of droplet size and distribution
- Circulation of foaming products underneath the su

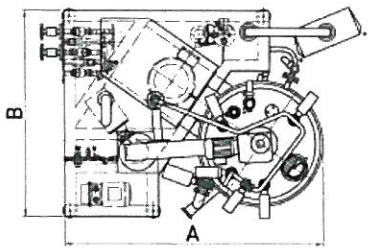
High reproducibility

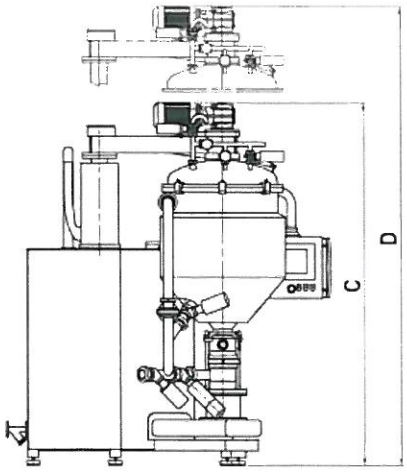
- Recipe controlled production
- Excellent cleaning and sterilization characteristics

Lower operating costs

- Large variability in batch sizes
- Fast creation of emulsions







	Usable volume (l) min. / max.	Installed power (kW)*, approx.	Dimensions (mm) Length A	Width B	Height C	Height** D
Dinex V Lab	3–12	9	1410	1020	1810	2100
Dinex V 200	15–160	26	2000	1500	2400	3000
Dinex V 400	15–300	26	2000	1500	2700	3400
Dinex V 700	15–500	26	2400	1500	3000	3900
Dinex V 1300	50–1100	53	2500	1600	3600	4800
Dinex V 1800	50–1500	53	2800	1800	3600	4800
Dinex V 2400	50–2000	58	3000	2000	4000	5000
Dinex V 3500	100–3000	65	3300	2500	4900	
Dinex V 5200	200–4000	101	3350	3000	5100	

* without counter-rotating agitator ** wit

For over 65 years, FrymaKoruma has been a leading international supplier of processing machinery and equipment for the pharmaceutical, cosmetics, food and chemical industries. Based in Germany and Switzerland, the company employs about 150 people. Our goal is not simply to meet all our customers' expectations without any ifs and buts; we also attach great importance to the development of long-term partnerships. Our pursuit of this objective is altogether successful – over 23000 installations are currently in use in more than 180 different countries.

Customer support

FrymaKoruma is more than just a supplier of machines and plant. As a customer focused partner for plant engineering, we take an idea and turn it into a high-tech solution that matches your requirements exactly – with installation, documentation and commissioning from one source. If you need to be further convinced before you commit yourself, ProTec – our pr technology and training centre – lets you do just that. F our specialists' vast know-how and years of experience development of liquid and semi-solid products. In our v equipped, modern laboratory, you can develop or optim recipes, test machine models, scale up processes and test batches for pharmaceutical, cosmetics, food or ch applications.

Our Customer Service, which is available worldwide, m sure you continue to keep abreast of a constantly evolvi market long after the development and manufacture of plant has finished. It includes much more than simply nance, modifications and upgrading. We also advise an you in all matters relating to your equipment, provide o training and stock a range of spare parts which can be to you promptly.