



**LABORATORY UNITS
FOR THE PRODUCTION OF SOLIDS IN THE PHARMACEUTICAL INDUSTRY**



SOLUTIONS ON A LABORATORY SCALE, FROM THE PIONEERS.

Decades of experience for your lab

As a pioneer in fluidized bed technology, we have more than sixty years of experience in the development of round-breaking process solutions for the pharmaceutical industry.

Thanks to our extensive expertise as the market leader in the construction of plants for drying, granulating and coating, we are familiar with the requirements of the pharmaceutical industry and understand the development and manufacturing processes involved in the production of solids. As your partner, we support you with innovative developments and solutions for your specific laboratory application.

Intelligent laboratory units for diverse processes

Do you want to experiment with new formulations? Or do you want to test different processing options in the fluid bed, in high-shear granulation, or for the coating of tablets? Do you require precise dosing with minimum amounts of active ingredients? Maybe you would also like to produce small amounts for clinical trials? No matter how complex your requirements are, our laboratory units for the most diverse of process technologies allow you to carry out your processes reliably even on the smallest scale, starting with the very first trial. Our multi-functional lab and pilot systems for diverse process options have proven themselves many times over for the development of processes and in reliably shifting from laboratory scale to production scale.

Solutions to implement your product ideas. That is what we strive for.



CONTENT

Solutions on a laboratory scale, from the pioneers.	2	VG.Lab	14
Intelligent laboratory units, from the experts	4	Drum coater	15
Fluidized bed system	6	GC 1	15
Mini-Glatt / Midi-Glatt	6	GC.Lab	16
GPCG.Lab	8	Container blenders	17
High-shear granulators	10	CML	17
TMG	10	CM.Lab	18
Pelletizer P 20 and Extruder GBE 130	11	Rotor sieve	19
VG 65/10	12	GSE 80	19



INTELLIGENT LABORATORY UNITS, FROM THE EXPERTS.

SIX STRONG ARGUMENTS FOR YOUR LAB

Innovative processes for the development and production of solid dosage forms require individual solutions. This process begins during testing in the lab. All the while the requirements of the marketplace and legislators are increasing in terms of technology, efficiency, and safety, as well as validation, qualification, and documentation. The key is to get to market quickly and cost-efficiently with innovative products.

Glatt is the intelligent problem solver for the lab. With systems that are perfectly thought-out and made for the universal requirements of the pharmaceutical industry: With innovative Glatt technology and an intelligent Glatt design. For all needs and requirements. There are six strong arguments for your advantage in the marketplace!

Reliable test results with reproducible quality

Our laboratory units achieve reproducible product quality, even for the most complicated processes.

automated control systems are in compliance with GAMP guidelines and are developed and manufactured in-house based on globally established software and hardware. You benefit by having the best process control, lasting system availability, and long-term support.

Compact & ergonomic design for top handling

Glatt systems offer all the advantages of integrated technology. The functional design makes them easy to operate all around, components can be replaced quickly, and cleaning is easy. Maximum efficiency is always the goal.

Reliable safety concepts for the protection of people, products, and the environment

We offer intelligent technical solutions for the safety of people, the environment, and products. We always safely protect your product in the entire plant and processing line from operating personnel and the environment.

Modular & individually configurable for full flexibility

Our multifunctional laboratory units adapt to your individual requirements. The modular structure and flexible configuration make it possible to respond quickly and effectively to changing demands.

Proven RABS and isolator technology is available if required. You are safe with us, even in the event of an emergency: Our safety concept offers a unique standard worldwide thanks to pressure shock resistance for closed systems.

Intelligent control solutions for simple process control

For efficient operation of your system, we offer reliable control systems that provide easy, intuitive operation. All

GMP-compliant design for optimal production of clinical samples

All components of our laboratory units fulfill GMP requirements, and, if requested, we provide all requirements for efficient validation, qualification, and documentation.



FLUIDIZED BED SYSTEMS

MINI-GLATT / MIDI-GLATT

Small size, big performance

The Mini-Glatt and its big brother, the Midi-Glatt are our laboratory classics for all fluidized bed processes with small batch quantities. They offer maximum performance for minimum product volumes for test drying, granulating, and coating processes as well as spraying with the bottom spray and top spray methods. The systems can also be used for clinical trials subject to GMP requirements.

The Mini-Glatt tower is suitable for volumes between 200 ml and 830 ml, the Midi-Glatt tower for volumes between 580 ml and 2,320 ml. The two machine towers can be easily interchanged.

Other highlights:

Compact design at full performance

The system offers all the advantages of integrated technology – combined with an innovative design and optimal processing.

And it is ready to work immediately. All you need is power and compressed air.

Easy to disassemble and clean

The machine tower can be easily dismantled in just a few steps. The filters made of high-quality stainless steel are easy to clean by blowing them out.

Simple recording of data

A standard interface allows for an external data recorder to be connected at any time in order to document the process parameters.



Mini-Glatt



Machine tower components



Granulation and Bottom Spray insert



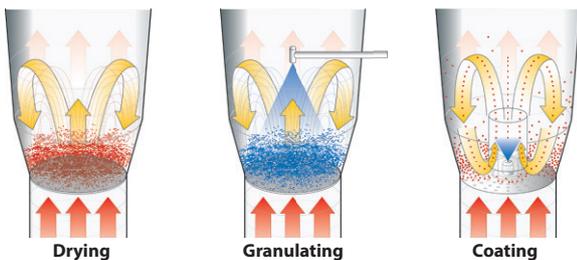
Midi-Glatt with Mini-Glatt interchangeable machine tower

Micro-Kit – ideal for micro batches

The Mini-Glatt can be easily retrofitted with the patented Micro Kit for micro-small product quantities. The Micro-Kit can master almost all fluid bed processes: granulating, drying, and coating with the bottom spray method, for a volume of 5 - 100 ml. The entire retrofit kit of the Micro-Kit is housed in a practical compact aluminum transport box. Much like the rest of the product family, the Micro-Kit is quick and easy to dismantle and just as easy to clean.



Micro-Kit



Mini-Glatt and Midi-Glatt – interchangeable machine towers
 Is the desired batch size for the machine tower too large or too small? No problem – you can simply interchange the machine towers. The system is also easy to retrofit if further requirements arise.

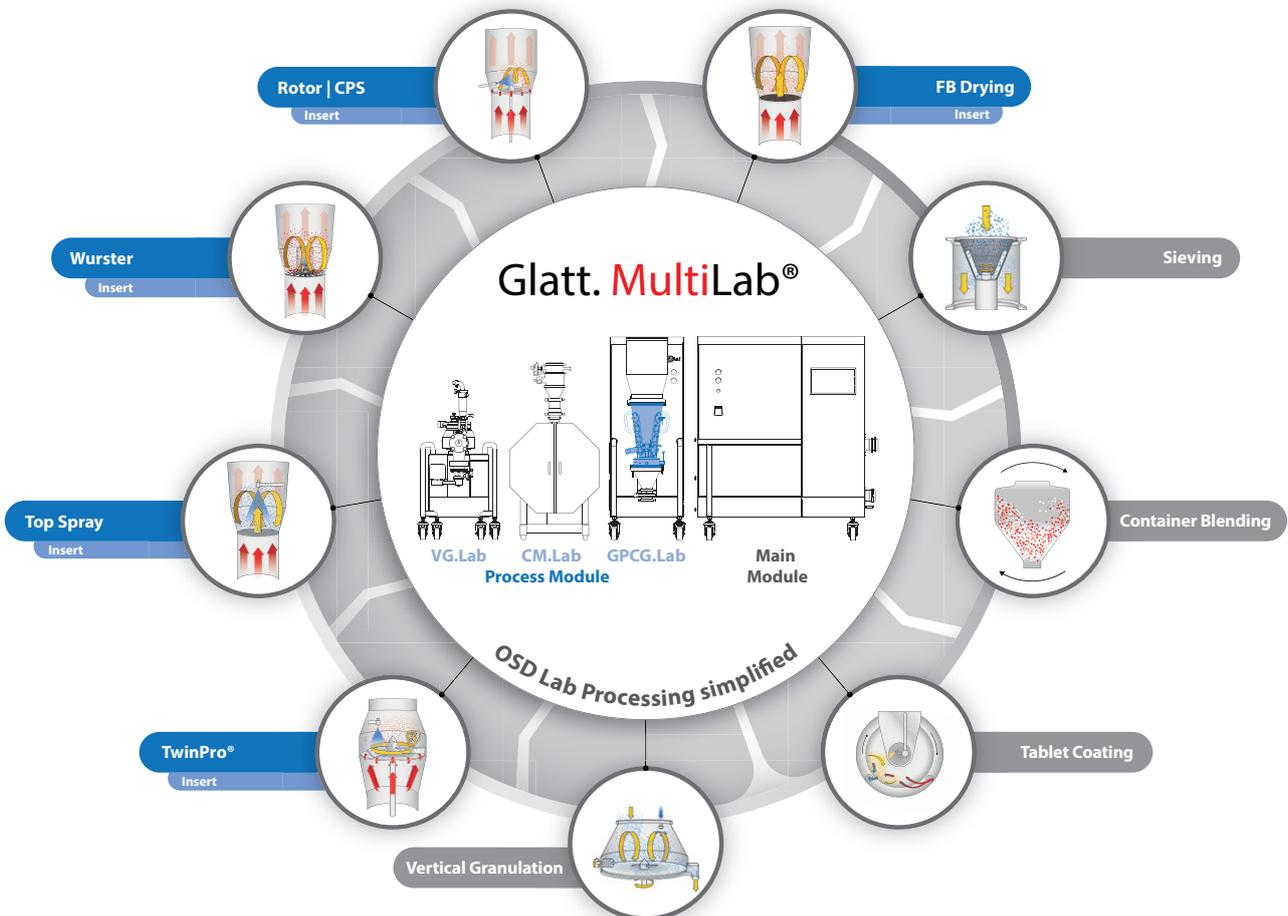
GPCG.LAB

The modular all-rounder for full process flexibility

The MultiLab GPCG.Lab process module is the most versatile and adaptable system of all Glatt laboratory units. The flexible multi-function machine offers as many as four processing options in a single system: drying, granulating, coating, and pelletizing. In addition to the drying and granulating insert, a Glatt HS Wurster insert for bottom spraying and a rotor insert for tangential spraying are also available as options, as is a TwinPro insert for combined high-shear granulation and fluidized-bed drying. From simple drying to demanding powder coating, no matter whether the top spray, bottom spray, or tangential spray method is used - anything is possible. The system is particularly easy to clean and is ideal for producing clinical samples.



GPCG.Lab



Other highlights:

TwinPro process insert

The TwinPro process insert provides high-shear granulation and fluidized-bed drying in one unit – for an operating range of 3 l to 8 l. Wet sieving and product transfer are eliminated, resulting in significantly more reliable processes. This makes the TwinPro ideal for total containment, ensuring maximum protection for people, products and the environment.



TwinPro process insert

CPS process insert: This technology ensures very precise and uniform granulation, making it ideal for producing microgranules with high active ingredient content.

The MultiLab can be combined with other process modules such as the CM.Lab blender, VG.Lab high-shear granulator and GC.Lab drum coater, making it an all-in-one solution for OSD processes.

Other highlights:

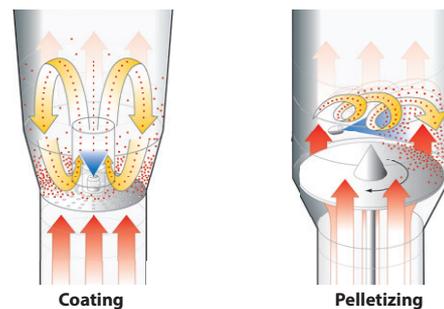
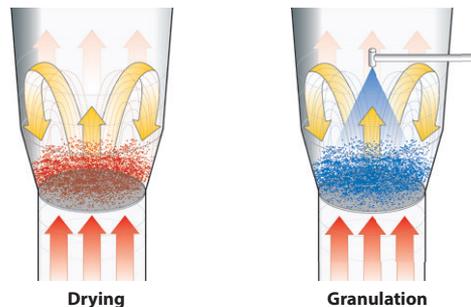
- The GPCG.Lab offers many process combinations with six process vessels of 3 l, 6 l and 10 l.
- In addition to the two proven filter systems, the new filter technology offers a large filter surface and easier handling during installation and filter change

Rotor and CPS process insert

The process inserts are ideal for producing pellets by direct pelletizing and various types of powder layering. Rotor process insert: The tangential nozzle is installed directly in the product bed. The adjustable air gap of the rotor allows the proper airflow to be selected at any time.



Rotor process insert



HIGH-SHEAR GRANULATORS

TMG

The efficient wet granulator for very small quantities

The TMG is our efficient high-shear option for the testing of minimal product volumes. It features flexible, temperature-controlled working vessels to mix and granulate powders. It is perfect for setting up on a bench top unit or on a mobile laboratory trolley thanks to its GMP-compliant and compact design.

Flexibility is provided with exchangeable working vessels with volumes of 0.5, 1, 2, 4, and 6 liters which allow granulation of product volumes between 0.1 and 4.5 liters.



TMG swap vessels 0.5 l, 1 l and 6 l

Extra easy handling

The cylindrical/conical vessels with single or double walls and integrated rotor and chopper can be inserted quickly and easily without any tools. Nothing could be simpler!!

Other highlights:

Individually configurable for full flexibility

The single-walled or temperature-controlled double-walled vessels feature a transparent lid and can be equipped with powder funnels and various spray nozzles for binder solutions as well as a spray pump. The rotor and the chopper speed can be seamlessly adjusted. The system can also be inerted to granulate organic solvents.



TMG

Safety components for reliable protection

The TMG is equipped with a safety sensor and a protective cover. For safe work in the lab.

Integrated control system for optimal process control

The intuitive touch panel control displays all critical process parameters, process curves and the integrated recipe management.

It is fitted with a USB port to exchange data externally.

Temperature measurement and end point determination by output measurement complete the intelligent equipment.

For reliable process control.



TMG 1 l working vessel with funnel and temperature sensor

PELLETIZER P 20

Pelletizing of extrudates

The rounder P (pelletizer) is the ideal system for rounding of extrudates. The rounder is up to almost all areas of application. The P20 pelletizing vessel makes the TMG an all-rounder.

The extrudates must be moist enough to be made round without further disintegration. During pelletizing, the abraded particles are pushed together and rolled up.

The rotating motion of the rotor transports the pellets to the edge (centrifugal force) and carries them along in the direction of rotation. This creates a rolling motion about two rotational axes, resulting in a helix. This intense rolling motion smooths the surface of the extrudates.



P20 pelletizing vessel for TMG base unit

Pelletizing with TMG base unit

Spheronization to the desired roundness by collisions of the extrudates with the pelletizing wall and die, as well as collisions within the product ring.

The P20 pelletizing vessel, which works with TMG base unit, has a batch size of 0.3 to 1.0 kg and a throughput of 3 to 12 kg/h and assumes a charging time including loading, spheronization and unloading of $t = 5$ min at uniform speed.

EXTRUDER GBE 130

Stable and uniform extrudates

The continuously operating Glatt GBE basket extruder enables particularly efficient extrusion on a laboratory scale. Unique technology combined with ease of use ensures high throughput with consistent, optimum extrudate quality. The action of the pressure gages results in a continuous supply of product to the process chamber and homogenization of the feedstock.

The product is then exposed to the high pressure of the extrusion knife, allowing for good processing of delicate products.

Extrusion

Extrusion is the process of forcing a moistened, plastic mass through a die and shaping it to its pre-determined cross-section. The properties of the extrudates or pellets spheronized later on is essentially determined by the recipe.



GBE 130





VG 65/10

The flexible vertical granulator for efficient scale-up

The VG 65/10 is our flexible high-shear option on a laboratory or pilot scale. It can be used anywhere and deployed immediately thanks to its GMP-compliant and compact design.

The working vessels with volumes of 10, 25, and 65 liters allow for granulation of product volumes between 2.5 and 50 liters. Even batch sizes from 0.1 liters are possible when a TMG adapter is used.

Flexible working vessels for top functionality

Flexible, temperature-controlled working vessels increase functionality and make it possible to mix and granulate in a single system. The vessels can be easily and quickly exchanged without requiring any special tools. Depending on the application, tilting or swivelling lids with inflatable seals are available for the working vessels.

The PRO concept for maximum safety

Our PRO concept makes it possible to granulate with solvents without inerting*.

The closed system is pressure shock resistant up to 12 bar. Your operators, your products, and of course the environment are perfectly protected.

* except TMG adapter



Swiveling lid on VG 65 / 10 PRO



VG 65/10 with 65 l working vessel



VG 65 / 10 with 10 l working vessel. 25 l / 65 l vessels on trolley



TMG adapter on trolley

TMG adapter for the smallest batches

The system can also be used with small vessels for volumes from 0.1 to 4.5 liters when using a TMG adapter attachment. This means that, even with the smallest batches, you can take advantage of the same control system available for laboratory and pilot scale.

Intelligent control system

The intuitive operating concept with a 15" touch panel and flexible language switch-over as well as integrated recipe management, batch report and audit trail are just a few of the highlights of this control system made by Glatt. The relevant process data can be easily archived via USB download or an external data interface. Making process management even easier and safer.



VG 65/10 with TMG adapter, 0.5l / 2l / 4l and 6l working vessels

VG.LAB

VG.Lab process module – the flexible vertical granulator for maximum process efficiency

The MultiLab VG.Lab process module is the ideal laboratory- and pilot-scale high shear granulator for rapid production of compact granules. Thanks to the new integrated sieve technology, the VG.Lab shortens the process time while maintaining product quality. Various rotor designs and sieve inserts are available.

The optionally temperable working vessels in 5 l 10 l, 15 l and 25 l allow smaller batch sizes down to 0.1 l using an adapter. The process module is compact and mobile for use anywhere.

The VG.Lab is ideally used in combination with the other process modules of the MultiLab, such as the CM.Lab blender or the GPCG.Lab fluidized-bed dryer.



VG.Lab



MultiLab with fluidized bed and VG

DRUM COATER

GC 1

The efficient drum coater for very small quantities

The GC 1 offers maximum performance for mini batches – starting from a volume of 100 ml. Featuring three replaceable drums and a special nozzle arrangement, it delivers optimal film coating results for the smallest sizes with the highest process efficiency.

This allows for feasibility tests to be carried out quickly and easily.

Three replaceable drums

The GC 1 is suitable for a working range from about 0.1 l up to 2.5 l.

Replaceable drums with a working volume of 0.8, 1.6, and 2.5 liters are available.

Other highlights:

Coating quality with the Glatt spray nozzle

The Glatt spray nozzle features an air cap with patented ABC-Technology® (Anti-Bearding-Cap). Precise spraying without bearding and easy to adjust control from the outside.



Drum and spray nozzle

Optional: Qualification package for the production of clinical samples.

The production of clinical samples is subject to the highest requirements: from FDA-compliant materials through to HEPA-filtered inlet air. Our qualification package and optional hardware additions provide all the prerequisites for processes that can be validated and include a comprehensive documentation of the processes.



GC 1



Easy handling

Functional design for top handling

All functions and connections are perfectly integrated into the design and allow for optimal functionality. Whether for changing the drum or for cleaning, the entire housing can be removed and re-attached in just minutes.

And the system is always ready for use immediately thanks to the plug & play function.

Ergonomic operation for efficient process control

The ergonomically designed control system allows for all important functions to be used quickly and easily.

GC.LAB

The modular solution for lab-scale tablet coating.

The MultiLab GC.Lab process module for tablet coating on a laboratory scale. Optimized spraying behavior and homogeneous coating with reproducible quality.

Four changing drums

The GC.Lab module can be used flexibly for a working range of 1.3 l to 12 l thanks to changing drums. Changing drums with working volumes of 2.5, 5, 9 and 12 liters are available.

Other highlights:

Glatt spray nozzle for homogeneous coating quality

Perfect coating requires a homogeneous, adjustable spraying pattern and a reproducible spraying behavior.

The Glatt spray nozzle has an air cap with patented ABC-Technology® (anti-bearding cap).

This ensures accurate spraying without beard formation. The spray nozzle can easily be adjusted and positioned from the outside.



GC.Lab

Excellent handling and integrated technology

All functions and connections, as well as the swiveling and extendable nozzle arm, are perfectly integrated into the design for optimal handling. The ergonomic design ensures easy charging and discharging. Whether you're changing drums or cleaning, the large front door provides easy access to the process area.



Highlights:

- Compact design
- Optimized tablet coating on a small scale
- Glatt spray nozzle for uniform and reproducible spraying behavior
- Integrated spraying system
- Guaranteed scalability
- Prepared for containment applications
- Film coating process module for the modular MultiLab OSD granulation line

CONTAINER BLENDER

CML

The flexible container blender for small batch sizes

The CML is the perfect laboratory unit for blending and homogenizing powders and granules in just minutes. The compact multi-talent machine features a safety sensor,

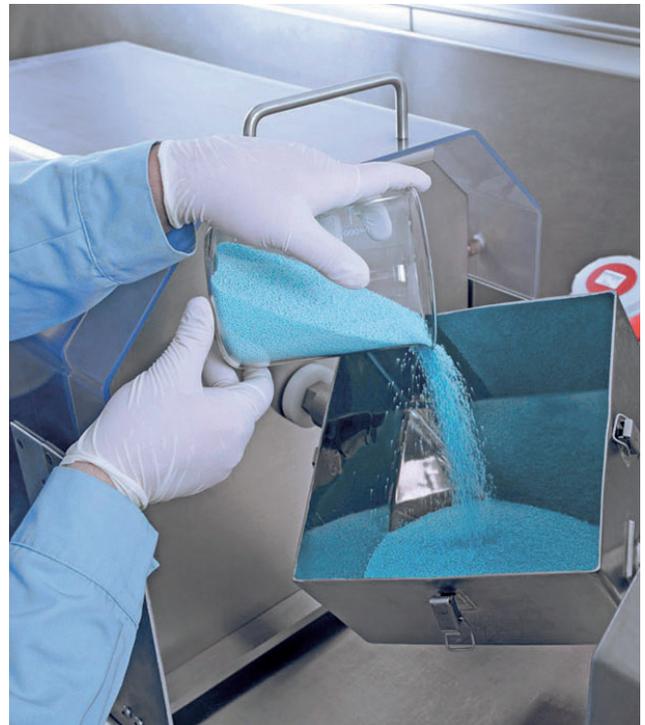


CML with 5 l container

Exchangeable containers on request

Flexibly exchangeable container inserts in the nominal sizes 1, 2, 4, 5, 8 and 10 liters are available for your individual requirements. Custom-fit for your application.

a protective cover as well as a quick and safe locking system. The blending time is freely selectable, while the speed can be variably adjusted from 20 to 120 RPM.



Easy charging



CML-Container 1 l to 10 l

CM.LAB

The mobile container blender for small product quantities

The CM.Lab is ideal for mixing small quantities of product. As a mobile module, the blender is perfectly coordinated with the other process modules of the MultiLab.

The pneumatic conveyor system of the CM.Lab ensures safe product transfer. The optimal positioning of the IBC in the CM.Lab provides fast blending results and uniform mixing.

Containers in the sizes 1 l, 2 l, 4 l, 5 l, 8 l, 10 l, 25 l and 50 l can be used. The container is compact and mobile and therefore immediately available everywhere. The CM.Lab is ideal for use as an integrated component of the MultiLab in conjunction with PCS and GSE, the perfect complement for closed product transfer to the container.



CM.Lab



CM.Lab and TwinPro MultiLab

ROTOR SIEVE

GSE 80

Innovative design – maximum performance

All in one - with GSE you can homogenize, disagglomerate and crush powders and granules in a single unit.

The GSE conical rotor sieve ensures homogeneous particle sizes and excellent particle size distribution for wet and dry sieving. The GSE 80 is the ideal sieve for applications on a laboratory scale. Glatt rotor sieves are characterized by high performance and easy handling.

The innovative design is an outward sign of inner value - in short, state-of-the-art screening technology.



GSE 80 with stand



GSE 80 on carriages with integrated control system

With a modular system for easy handling during cleaning, maintenance and process integration.

With a selection of different types of rotor and several sieve inserts with different hole and size configurations as well as featuring variable speed adjustment, the flexible all-rounder will perfectly adapt to your individual requirements.

A convenient sieve gap kit can be used to optimize the sieve gap, and straining inserts are available for larger agglomerates. Perfectly tailored to your individual needs.

Integration in all cases

Whether as a bench top unit, on a mobile base frame or with a swivel arm: The adaptable GSE 80 can be integrated in many different ways, according to your requirements. Just the way you need it.

Highlights:

- Three applications in a single unit: wet sieving, dry sieving and protective sieving combined in one unit
- Quick changeover: The unique design allows for quick changeover between wet, dry and protective sieving.
- Modular design: The modular and cGMP compliant design facilitates cleaning, maintenance and process integration
- Efficient throughput: High throughput thanks to unique rotors
- Increase performance by up to 15% when using our innovative rotor insert
- Durable sieve inserts: Unique manufacturing technology provides an extremely long service life
- Easy process adjustment: Precise sieve gap adjustment between rotor/sieve insert



Rotors



Sieve inserts



Sieve masks

