

Gericke

Powder Processing Equipment and Systems

Continuous Mixing Systems with GCM Mixers

Throughput 10 – 150'000 l/h



**Dry solids blending
Solid and liquid blends
Flavouring
Coating
Granulation
Premixing for extrusion**

Versatile continuous mixing processes

Innovative and proven technology

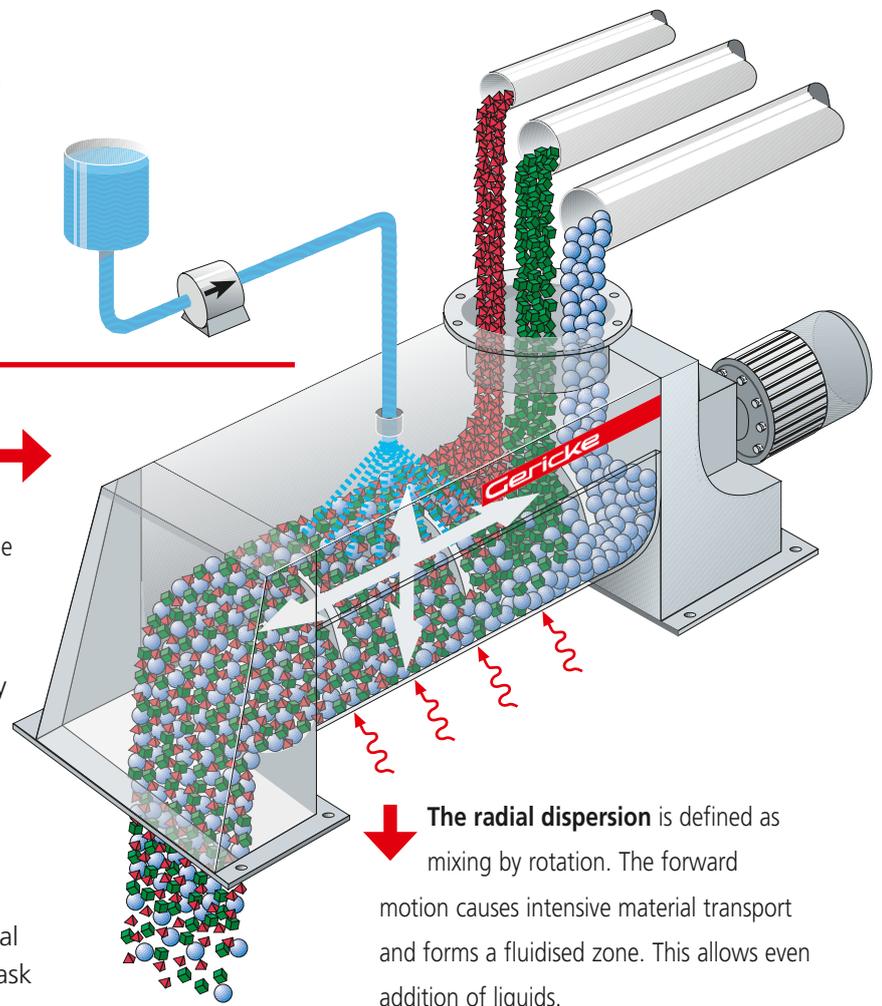
Gericke machines and processes have been setting the standards in mixing technology since 1894. Our mixers produce high-quality intermediate and end products with maximum homogeneity. Extremely fragile products are handled very gently. Micro ingredients are accurately mixed. As a specialist in the field, Gericke is also experienced in related processes such as agglomeration, granulation, coating and heat transfer, which are essential for innovative end products.

| Continuous mixing processes | Process mixer |
|---|--|
| are a useful alternative to traditional batch processes and have the following advantages: | Effective mixing is essential for the following processes: |
| <ul style="list-style-type: none"> - efficient process management - high plant usage - simple automation - low space requirements - optimised energy usage | <ul style="list-style-type: none"> - heating and cooling - coating of solid particles - agglomeration, granulation - reaction - addition of liquid active substances or aroma - dispersion |

Continuous mixer – sample areas of application

| Industry | Application | |
|-----------------|--|---|
| Food | cereals, muesli bars sugar mixtures (preserving sugar, doughnuts etc.) milk powder and infant nutrition diet breakfast drinks diet foods micromixtures of iodine and fluoride vitamin addition |  |
| Chemical | premixes for extrusion processes (e.g. technical ceramic) washing powders (e.g. addition of enzymes) pesticides fertilisers building materials |  |
| Plastics | covering and coating granules PVC polypropylene polyethylene plastic films plastic additives |  |

Mixing principle



The axial dispersion compensates for variations in feed concentration and results in a defined residence time distribution.

The infeed ingredients are continuously weighed by the Gericke metering system and fed into the mixing chamber in accordance with the recipe.

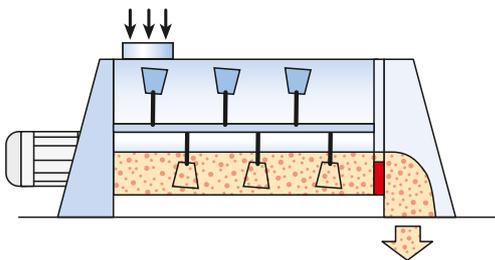
GCM continuous mixers offer the optimum combination of radial and axial mixing (dispersion) depending on the task and the type of component.

The radial dispersion is defined as mixing by rotation. The forward motion causes intensive material transport and forms a fluidised zone. This allows even addition of liquids.

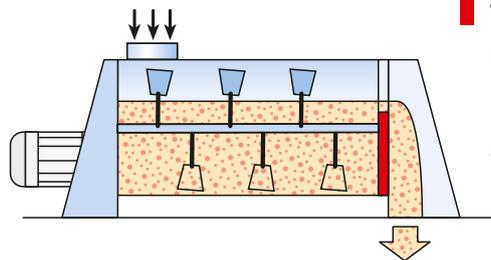
The shape, layout and adjustment of the Gericke mixing tools has been developed and specified by many tests and in collaboration with universities.

The GCM mixer is designed as a continuous mixer with modular components. The residence time and the energy input can be varied.

Adjustment options of the weir



Weir setting low → short residence time



Weir setting high → long residence time

The fill level is adjusted by a combination of the infeed, speed of rotation and weir plate adjustment.

Features:

- maximum mixing homogeneity even with very small component proportions
- easy adjustment of mixer to vary products, recipes and outputs
- minimum product residue at the end of the process, good residue discharge
- easy, fast and complete discharge
- low space requirements even with large throughputs
- hygiene and pharmaceutical models (optional)
- inertisation with gas blanket (optional)

The right mixer for every application

| Solid-solid blending | Solid with liquid additives | Liquid with solids |
|--|--|---|
| <p>Powdered products such as additives, washing powder components, solids and grains including cereals or plastic granules can be mixed. Product properties such as very fine, wide particle size distribution or variable specific density can be handled. With the optimum ratio of mixing volume to throughput the mixing process is gentle, fast and respects the different properties of the bulk material.</p> | <p>Bulk materials are sprayed with aroma, binding agents or other liquids or the liquid is poured on. The prime concern is prevention of formation of agglomerates, absorption or liquid binding with the product. The mixer is adjusted by size, number and location of spray points, nozzle, residence time etc.</p> | <p>The ratio between solid and liquid may be 50% or greater. The mixed product remains in a liquid or viscous phase. GCM mixers can be cleaned quickly with the easy access mixing chamber.</p> |
| <p>Examples</p> <ul style="list-style-type: none"> - preserving sugar - milk powder with vitamins and mineral additives - spices - additives with plastic granules - raw materials for ceramic extrusions <p><i>(Mixing tests in the Gericke Test Centre)</i></p> | <p>Examples</p> <ul style="list-style-type: none"> - instant coffee with aroma - mixing muesli bars - spreads - substrates with expanded glass beads and binders | <p>Examples</p> <ul style="list-style-type: none"> - coating masses for confectionary - binders for gluing processes - viscous mixtures |
|  |  |  |

Low output range: 10 l/h or short residence time approx. 5 seconds

GCM 250 / GCM 500

Output range:
GCM 250, 10 to 250 l/h

GCM 250 - mixer
as pharma processor, GMP-compliant



Output range:
GCM 500, 250 to 2'800 l/h

GCM 500 - plastic granulates with additive –
mixer in pressure-resistant design (3 bar)



GCM 800 / GCM 1200

Output range:
GCM 800, 500 to 12'000 l/h

GCM 800 - U-trough, hygiene model machined



Output range:
GCM 1200, 4'000 to 40'000 l/h

GCM 1200 - round with double mantle
and pressure-resistant design (3 bar)



GCM 1800 / GCM 2800

Output range:
GCM 1800, 40'000 to 80'000 l/h

GCM 1800 – with electric heating mat



Output range:
GCM 2800, 60'000 to 150'000 l/h

GCM 2800 – with GCM 1200 housing



Large output capacity: 150'000 l/h or long residence time

Engineering of continuous metering and mixing plants

Standard mode

- 2 trough types: round or U-shaped
- parts in contact with product: stainless steel
- welding seams continuous inside and outside
- surface finish: glass-bead blasted to highly polished
- mixing chamber with fixed or manually adjustable weir
- shaft seal both sides: stuffing box with aramide packing (Kevlar), FDA-compliant
- mixer cover in 2 parts, screwed down with flat gasket, infeed cover with spout and inspection aperture above discharge, screen and gasket
- design with stainless steel
- IP 65/55 drives

(deviation possible)

Options

- frequency inverter with filter
- front panel with quick release clamp and safety switch
- injection collar in infeed cover
- injection spout with hygienic retaining screws
- shaft seal with air barrier or airpurge connection
- hygiene model: inside welding seams ground Ra < 1.3 µm
- pressure-resistant model for gas overlay
- jacket for cooling or heating
- mixer Teflon-coated inside or coated with wear protection
- discharge funnel with inspection lid
- gear motor with food-grade oil

Safety



Mixer can be Ex-certified - II 1/3 D. Zone definition inside zone 20, outside zone 22

ISO 9001:2000

ISO 9001:2000 guarantees high quality



Gericke is a sponsor of EHEDG



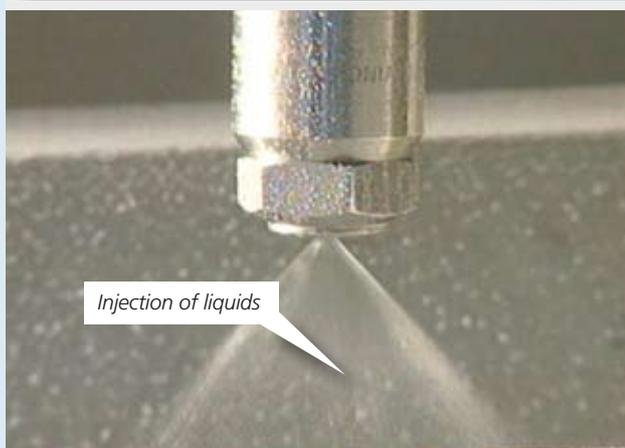
Side cleaning door



Mixer Ra < 1,3 µm ground



Fixed weir



Metering feeders and mixers from one single source. Gericke is specialised in continuous feeding equipment. Each task matches to combine the two processes of metering and mixing, including weighing and control.



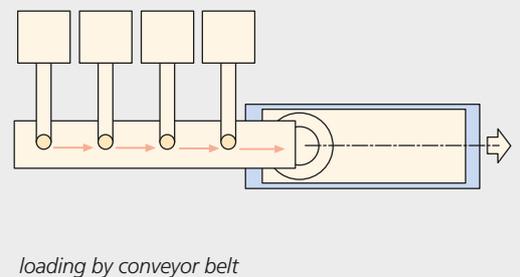
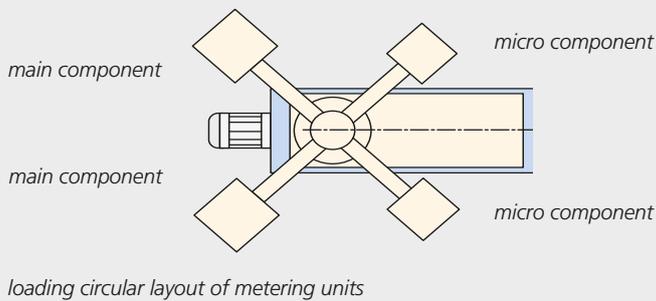
The correct placement of feeders and mixers makes safe operation and cleaning easier.

Gericke recommends taking the following criteria into account:

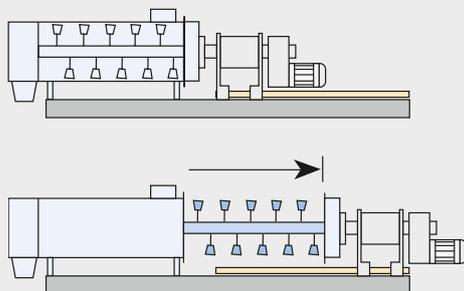
- Place the mixer close to the downstream processing stage.
- Plan space for access around the metering units and mixers.
- Minimise vibration and pressure forces on gravimetric feeding units.
- Integrate the cleaning concept when designing the plant.

Our project engineers are ready to support in designing the optimum layout.

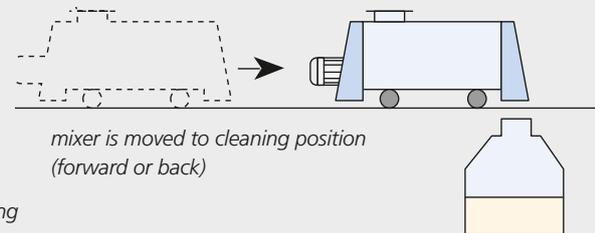
Loading types



GCM ECD with extractable rotor



mixer is moved to cleaning position on a guide rail



Gericke service: the guarantee for optimised metering-mixing processes

Because of the complexity of mixing processes Gericke specialises in planning and implementing complete mixing plants, from infeed, storage, preparation and feeding of the components, continuous or batch mixing to final filling. The advantage of an integrated total solution is demonstrated by items such as continuous mixing, where the processes of metering and mixing are of equal importance.



Literature:

- Mischen von Feststoffen
- Mixing of solids

Available from Kluwer
Academic Publishers or
Amazon



Service offers:

- analysis of mixing processes
- formulation of application and requirements
- design of the process, including variations
- practical testing with your products
- specification of final process solution
- supply, assembly and commissioning of plant

Test Centre

Not only technical calculations but also practical tests in the Gericke Test Centre are definitive for the process design. The results lead to innovative or improved final products and increase in investment returns.

For more information on our products, services, distributors see:

www.gericke.net

Gericke representatives:

Gericke

Powder Processing Equipment and Systems

CH-8105 Regensdorf
Tel. +41 44 871 36 36
gericke.ch@gericke.net

GB-Ashton-under-Lyne
Tel. +44 16 13 44 11 40
gericke.uk@gericke.net

FR-95100 Argenteuil
Tel. +33 1 39 98 29 29
gericke.fr@gericke.net

NL-3870 Hoevelaken
Tel. +31 33 25 42 100
gericke.nl@gericke.net

DE-78239 Rielasingen
Tel. +49 7731 929 0
gericke.de@gericke.net

CN-200020 Shanghai
Tel. +86 21 53820108
gericke.cn@gericke.net

SG-787813 Singapore
Tel. +65 64 52 81 33
gericke.sg@gericke.net