The Rotor / Stator principle for dispersing and homogenizing equipment, originally invented by KINEMATICA, has become the worldwide accepted standard for homogenizing and dispersing a solid, liquid or gaseous phase into a liquid phase.

KINEMATICA Rotor / Stator Homogenizers successfully process emulsions, suspensions and foams by reducing the size of solid particles, droplets and gas bubbles to a few microns or less. Small and large amounts of product are dispersed in a more economical, faster and better way than with any other device.

What sets KINEMATICA apart:

- Extra customer value by professional advice - over 40 years of application knowledge and quality - ISO 9001 certified
- Continuous improvements in the dispersing technology
- Operational work with scientists from Switzerland, Austria, Germany, China, Japan and USA for specific applications
- Excellent quality solutions for dispersing applications in the chemical, biochemical, pharmaceutical, cosmetic and food industry
- Leading specialist and manufacturer for homogenizers from lab to pilot plant and production with volumes from 0.05 ml up to 10’000 l and throughputs from 10 l/min up to 150’000 l/h
- Results from the lab can be scaled up to pilot plant and production
- Equipment is built 100% to customer and product specifications including IQ and OQ

KINEMATICA offers complete processing systems to customer and product specifications including premix vessels, piping, pumps, stirrers, processing tanks and electronic regulators. The advantage is to get a whole plant out from one source and ready to use. All components will be well suited to customer’s demands.

For further information, a quotation or a personal demonstration please contact us or fill in our applications questionnaire on the web and send it back to us.

Our staff will be glad to assist you.
SERIES PT / PC-C
for batch emulsions / suspensions

- Homogenizing, mixing and size reduction of coarse solids into liquid
- Production of emulsions and suspensions with medium to finest droplet and particle sizes
- Wet milling and dispersing of solids, fibers, stringy materials, tissues, cells into fluids and polymers
- High turbulent mixing
- and more

SERIES MT / MT-V
for finest inline emulsions / suspensions

- Homogenizing, mixing and size reduction of coarse solids into liquid
- Production of emulsions and suspensions with medium to finest droplet and particle sizes
- Extractions
- Bio-Fuel applications
- Accelerating of reactions
- Gassing of fluids
- De-agglomerations

SERIES MT-VPC / MT-VPR
for most efficient powder induction

- Powder induction of light to heavy powders
- Powder dispersing
- Suitable for powders used in chemical, pharmaceutical, cosmetic, biochemical and food industries
- and more

SERIES MT-FM
for finest foam dispersions

- Foamed products with bubble sizes below 20 mm, depending on product
- Foamed protein, dairy products, ice-cream, confectionary, filling products
- Mousse-products
- Technical foams
- Pharmaceutical / medical foams
- Food foams, foamed sauces
- and more

SERIES RT
complete dispersing systems

- Production of creams, lotions, emulsions
- Pharmaceutical or cosmetic products
- Wet milling and dispersing of solids, fibers, stringy materials, tissues, cells into fluids and polymers
- Extracting of enzymes from bio masses
- and more
**POLYTRON® PT machines** are batch homogenizing processors. The dispersing aggregate of the machine is immersed in a processing vessel and the product is processed by the rotor/stator dispersing generator.

**KINEMATICA** offers **POLYTRON®** pilot plant and production machines with a broad choice of different drive systems, shaft lengths, dispersing generators, stands and processing tanks for different applications and working volumes from a few liters up to several thousand liters.

- Working volumes up to approx. 50 liters (pilot plant) and up to approx. 10'000 liters (production)
- Powerful drive systems including speed regulation
- Standard and special shaft lengths available in CIP design
- Available with mechanical seal systems for pressure and vacuum applications
- **ATEX (EX-Proof) versions** can be supplied
- Dispersing generators for a wide range of working volumes and homogenizing performance; also **BIOTRONA®** flash blender and dissolver available
- **Product wetted parts** made from high alloyed stainless steel
- Clamp, flange or customer-specific vessel connection can be supplied to connect the machine to the process vessel
- Different stand models - also moveable - with electric, pneumatic or hydraulic stroke deliverable
- **Process control** can be designed and supplied
- **Greatest possible flexibility** to reach the application goal

### Dispersing Generators for Pilot Plant (choice) - Types, Diameters, Applications

<table>
<thead>
<tr>
<th>Model / Series</th>
<th>for volumes up to</th>
<th>tip speed max.</th>
<th>rpm max.</th>
<th>Ø generator</th>
<th>standard Shaft length</th>
<th>Power</th>
<th>Further Description, Options (see below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT 6100 D</td>
<td>30 l</td>
<td>34 m/s</td>
<td>24'000 rpm</td>
<td>36-60 mm</td>
<td>250 mm</td>
<td>1700 / 800 W</td>
<td>1,3,6,7,8,11,12</td>
</tr>
<tr>
<td>PT 7100</td>
<td>40 l</td>
<td>34 m/s</td>
<td>12'000 rpm</td>
<td>36-60 mm</td>
<td>400 mm</td>
<td>1.5 kW</td>
<td>1,3,6,7,8,11,12</td>
</tr>
<tr>
<td>PT-D 36-60</td>
<td>50 l</td>
<td>34 m/s</td>
<td>12'000 rpm</td>
<td>36-60 mm</td>
<td>400 mm</td>
<td>up to 3.0 kW</td>
<td>1,4,5,7,8,10,11,12</td>
</tr>
<tr>
<td>PT(-C) 60</td>
<td>50 l</td>
<td>8 m/s</td>
<td>3'000 rpm</td>
<td>60 mm</td>
<td>600 mm</td>
<td>up to 3.0 kW</td>
<td>2,4,5,9,10,11,12</td>
</tr>
<tr>
<td>PT(-C) 80</td>
<td>100 l</td>
<td>17 m/s</td>
<td>3'000 rpm</td>
<td>80 mm</td>
<td>800 mm</td>
<td>up to 4.0 kW</td>
<td>2,4,5,9,10,11,12</td>
</tr>
<tr>
<td>PT(-C) 120</td>
<td>400 l</td>
<td>25 m/s</td>
<td>120 mm</td>
<td>800 mm</td>
<td>up to 5.5 kW</td>
<td>2,4,5,9,10,11,12</td>
<td></td>
</tr>
<tr>
<td>PT(-C) 160</td>
<td>1'000 l</td>
<td>32 m/s</td>
<td>160 mm</td>
<td>800 mm</td>
<td>up to 7.5 kW</td>
<td>2,4,5,9,10,11,12</td>
<td></td>
</tr>
<tr>
<td>PT(-C) 250</td>
<td>4'000 l</td>
<td>17 m/s</td>
<td>250 mm</td>
<td>1000 mm</td>
<td>up to 22.0 kW</td>
<td>2,4,5,9,10,11,12</td>
<td></td>
</tr>
<tr>
<td>PT(-C) 330</td>
<td>8'000 l</td>
<td>16 m/s</td>
<td>1'000 mm</td>
<td>330 mm</td>
<td>up to 45.0 kW</td>
<td>2,4,5,9,10,11,12</td>
<td></td>
</tr>
<tr>
<td>PT(-C) 350</td>
<td>10'000 l</td>
<td>17 m/s</td>
<td>750 rpm</td>
<td>350 mm</td>
<td>up to 55.0 kW</td>
<td>2,4,5,9,10,11,12</td>
<td></td>
</tr>
</tbody>
</table>

**Further Descriptions / Options**

1. Batch Homogenizer for Pilot Plant
2. Batch Homogenizer for Production
3. Integrated speed regulation with digital display
4. Speed regulation by VSD available
5. ATEX versions available (standard I2G-T3 - Zone 1 & Zone 2)
6. PC connection and User Interface Software available
7. Quick Coupling type F for Dispersing Aggregates (also Dispersing Aggregates with coupling type B can be connected)
8. Dispersing aggregate in EC design; easy disassembled and clean or sterilizing
9. Dispersing aggregates / shafts available as closed shaft tube design (standard)
10. Dispersing aggregates / shafts available as C (PT-C series) design for CIP
11. Available with mechanical seal systems (also gas lubricated version) for pressure and/or vacuum applications
12. Special shaft lengths possible
**Dispersing Generators for Production (choice)** - Types, Diameters, Applications

<table>
<thead>
<tr>
<th>PTG G-Type</th>
<th>PTG M-Type</th>
<th>PTG F-Type</th>
<th>PTG BIOTRONA®-Type</th>
<th>PTG TB-Type</th>
<th>PTG DI-Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard generator, rotor and stator with one teeth row each</td>
<td>Standard generator, rotor and stator with one or two teeth rows each</td>
<td>Standard generator, rotor and stator with one or two teeth rows each</td>
<td>Flash blender model, blade rotor and stator with inclined slots</td>
<td>High speed mixing model, turbine stirrer</td>
<td>High speed mixing model, dissolver disk</td>
</tr>
</tbody>
</table>

- Dispersing, mixing and size reduction of coarse solids into liquid
- Extractions
- Mixing of fluids
- Crushing of lumps
- Intensive mixing

- Producing of emulsions and suspensions with medium droplet and particle sizes
- Wet milling of medium sized solids
- Extractions
- Acceleration of reactions
- Intensive mixing
- Crushing of lumps

- Producing of emulsions and suspensions with fine droplet and particle sizes
- Wet milling of fine solids
- Cell pulping
- Extractions
- Acceleration of reactions
- Fasing of fluids
- De-agglomerations

- High turbulent mixing with low shear forces
- Fast dissolving and suspending of solids also at higher viscosities
- Mixing and blending applications with smooth treatment also for higher viscosities
- Mixing and blending applications also for higher viscosities

---

**POLYTRON® PT-C series** is an enhanced EasyClean design where the stator tube is exchanged against stator rods. The design allows complete cleaning without disassembly and complies with CIP / SIP standards.

- Standard shaft seal

- Flange / Clamp connections for vessel mounting available

- Movable stand (left), fixed wall stand (right) or fixed ground stand
- Stroke: electric, hydraulic, pneumatic or manual

- Single mechanical seal versions including pressureless quench systems available for pressure and vacuum applications

- Double mechanical seal versions including counterpressure sealing systems available for pressure and vacuum applications
MEGATRON® MT machines are Inline homogenizers with a forced flow of the mixture through a working chamber. In the working chamber, the product will be processed by the rotor/stator dispersing generator(s).

With the series MEGATRON® MT and MEGATRON® MT-V KINEMATICA has set standards once more for the in-line homogenizing technology. regarding efficiency, safe operation and long working life of the machinery for a broad application area within almost every industry field. The MEGATRON® family can be divided into three branches with high, medium and low shear rates. With decades of experience KINEMATICA can be your reliable partner and advisor on choosing the right level of shear rate for your application and product.

- Throughputs from 50 l/h up to approx. 1'500'000 l/h
- High speed levels and tip speeds up to approx. 40 m/s
- Adjustable drive systems with power levels between approx. 2 kW and 100 kW
- Dispersing generators with rotor diameters between 30 mm and 350 mm; with fineness steps from coarse to medium to fine to super fine for reaching particle sizes within the lowest micrometer range respective the upper nano meter range depending on the properties of the treated products
- Vertically or horizontally installed single- or multi-staged working chambers
- Single or double acting mechanical sealing systems including supply systems
- Sterile versions, as well as CIP / SIP, 3A and ATEX versions can be supplied
- Product wetted parts made from high-alloyed stainless steel and sealing materials conform with the product.

### Dispersing Generators (choice) - Types, Diameters, Applications

<table>
<thead>
<tr>
<th>Model / Series</th>
<th>for throughputs up to</th>
<th>tip speed max.</th>
<th>rpm max.</th>
<th>Ø rotor</th>
<th>Power</th>
<th>Further Description, Options (see below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT 5100</td>
<td>60 l/min</td>
<td>37 m/s</td>
<td>21'000 rpm</td>
<td>30-40 mm</td>
<td>1.5 kW</td>
<td>1,3,6,7,9,11,12</td>
</tr>
<tr>
<td>MT(-V) 45</td>
<td>3'000 l/h</td>
<td>28 m/s</td>
<td>12'000 rpm</td>
<td>45 mm</td>
<td>up to 4.0 kW</td>
<td>1,4,5,7,8,9,10,11,12</td>
</tr>
<tr>
<td>MT(-V) 65</td>
<td>4'500 l/h</td>
<td>34 m/s</td>
<td>10'000 rpm</td>
<td>65 mm</td>
<td>up to 11.0 kW</td>
<td>2,4,5,7,8,9,10,11,12</td>
</tr>
<tr>
<td>MT(-V) 95</td>
<td>15'000 l/h</td>
<td>40 m/s</td>
<td>8'000 rpm</td>
<td>95 mm</td>
<td>up to 22.0 kW</td>
<td>2,4,5,7,8,9,10,11,12</td>
</tr>
<tr>
<td>MT(-V) 160</td>
<td>35'000 l/h</td>
<td>30 m/s</td>
<td>3'000 rpm</td>
<td>160 mm</td>
<td>up to 37.0 kW</td>
<td>2,4,5,7,8,9,10,11,12</td>
</tr>
<tr>
<td>MT(-V) 220</td>
<td>50'000 l/h</td>
<td>30 m/s</td>
<td>3'000 rpm</td>
<td>220 mm</td>
<td>up to 55.0 kW</td>
<td>2,4,5,7,8,9,10,11,12</td>
</tr>
<tr>
<td>MT(-V) 300</td>
<td>90'000 l/h</td>
<td>24 m/s</td>
<td>1'500 rpm</td>
<td>300 mm</td>
<td>up to 75.0 kW</td>
<td>2,4,5,7,8,9,10,11,12</td>
</tr>
<tr>
<td>MT 330</td>
<td>128'000 l/h</td>
<td>26 m/s</td>
<td>1'500 rpm</td>
<td>330 mm</td>
<td>up to 90.0 kW</td>
<td>2,4,5,7,8,9,10,11,12</td>
</tr>
<tr>
<td>MT 350</td>
<td>150'000 l/h</td>
<td>18 m/s</td>
<td>1'000 rpm</td>
<td>350 mm</td>
<td>up to 110.0 kW</td>
<td>2,4,5,7,8,9,10,11,12</td>
</tr>
</tbody>
</table>

Further Descriptions / Options

1. In-line Homogenizer for Pilot Plant
2. In-line Homogenizer for Production
3. Integrated speed regulation with digital display
4. Speed regulation by VSD available
5. ATEX versions available (standard I2G-T3 - Zone 1 & Zone 2)
6. PC connection and User Interface Software available
7. Working chamber available as single-stage design (one dispersing generator)
8. Working chamber available as multi-stage design (up to three dispersing generators in series)
9. Working chamber as horizontal design (Standard)
10. Working chamber available as “vertical” design (MT-V series) for CIP/SIP applications
11. Available with mechanical seal systems for pressure and/or vacuum applications
12. Special design of working chamber and dispersing generators as well as different materials of construction possible
<table>
<thead>
<tr>
<th>MT-V SERIES</th>
<th>MTO</th>
<th>MTK</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG ../2G</td>
<td>Working chamber without cooling / heating jacket</td>
<td>– Intensive mixing</td>
</tr>
<tr>
<td>MTG ../4M</td>
<td>– Working chamber with cooling / heating jacket</td>
<td>– Crushing of lumps</td>
</tr>
<tr>
<td>MTG ../6FF</td>
<td>– Shown as a single-stage working chamber with one dispersing generator</td>
<td>– Intensive mixing</td>
</tr>
<tr>
<td>MTG ../8FF</td>
<td>– Shown as a three working chamber with three dispersing generators in series</td>
<td>– Accelerating of reactions</td>
</tr>
<tr>
<td>MEGATRON® MT-V 160</td>
<td>– Producing of sauces, dressings, mayonnaise,</td>
<td>– Extractions</td>
</tr>
<tr>
<td>MEGATRON® MT 220</td>
<td>Applications with abrasive components</td>
<td>– Wet milling of fine solids</td>
</tr>
<tr>
<td>MEGATRON® MT 350</td>
<td>– Material of the generator: tool steel K600</td>
<td>– Producing of finest Bio-fuels</td>
</tr>
</tbody>
</table>

H-Type generators
- Special H-generators, rotor and stator with two teeth rows each and safety ring for high speed applications

K-Type generators
- Special generator, rotor and stator with one teeth row each, designed for optimal and smooth energy input

K600-Type generators
- Special hardened generator, rotor and stator with up to three teeth rows each

TiN-Type generators
- Special titan-nitrated generator, rotor and stator with up to three teeth rows each

Available for all series (batch and in-line)
- Applications: MTG ..4HM see MTG ..4M
- Applications: MTG ..4HF see MTG ..6F
- Applications: MTG ..24H see MTG ..26M

MTK
- Working chamber with cooling / heating jacket
- Shown as a single-stage working chamber with one dispersing generator

MT-V SERIES
- Working chamber of a MEGATRON® MT-V series in-line homogenizer is arranged vertically. The product is fed from above and leaves the chamber on the side. The design allows complete draining and complies with CIP, SIP and 3A standards

EW
- Single mechanical seal versions including pressureless quench systems available for pressure and vacuum applications

DW
- Double mechanical seal versions including counter-pressure sealing systems available for pressure and vacuum applications

MBF/FFB
- Standard fixed base frame
- Movable base frame

MT-V 160
-MT-V 220
-MT-V 350

MTK
- K-Type generators
- Special hardened generator, rotor and stator with up to three teeth rows each

MT-V SERIES
- Working chamber of a MEGATRON® MT-V series in-line homogenizer is arranged vertically. The product is fed from above and leaves the chamber on the side. The design allows complete draining and complies with CIP, SIP and 3A standards
After several years of development KINEMATICA succeeded in introducing to the market an extremely efficient powder dispersing machine with the series MEGATRON MT-VPC / VPR.

Advantages of the newly developed system patented are above all, that due to a strongly improved suction capacity unwanted lumps can be avoided during powder sucking and wetting. This averts, for one thing, a plugging of the powder supply line and improves at the same time the homogeneous dispersing.

The generated high vacuum with a simultaneous high suction capacity is substantially independent of the liquid throughput and to a certain extent, also independent of the pressure at the outlet. This grants a dust-free incorporation into the liquid. It has been shown that the generatable suction capacity is sufficiently high that heavy powders, e.g. metal containing powders, can also be sucked in.

The new MEGATRON MT-VPC / VPR powder dispersing machine with its convective powder wetting system and a wide range of various dispersing generators substantially increases the number of application in the field of chemistry, pharma and food.

The series includes at present various sizes with a throughput related to water and depending on the dispersing generator used from approx. 1'000 l/h to 80'000 l/h.

### Dispersing Generators (choice)

#### MTG ../2G
- Standard generator rotor/stator with one teeth row each
- Ø 45 - 300 mm
- Producing of emulsions and suspensions with medium droplet and particle sizes
- Wet milling of solids up to medium particle sizes
- Extractions
- Accelerating of reactions
- Intensive mixing
- Crushing of lumps

#### MTG ../4M
- Standard generator, rotor and stator with two teeth rows each
- Ø 45 - 300 mm
- Wet milling of fine solids
- Extractions
- Acceleration of reactions
- Cell pulping
- De-agglomerations

#### MTG ../6F
- Standard generator, rotor and stator with three teeth rows each
- Ø 45 - 300 mm
- Wet milling of fine solids
- Extractions
- Acceleration of reactions
- Gassing of fluids
- De-agglomerations

#### MTG ../6FF
- Standard generator, rotor and stator with three teeth rows each and reduced gaps
- Ø 45 - 300 mm
- Producing of finest emulsions and suspensions with finest droplet and particle sizes
- Wet milling of fine solids
- Extractions
- Accelerating of reactions
- Gassing of fluids
- De-agglomerations

#### MTG ../6FV
- Special generator, rotor and stator with three teeth rows each
- Ø 45 - 300 mm
- Producing of finest emulsions and suspensions with finest droplet and particle sizes
- Extractions
- Gassing of fluids
- Cell pulping
- De-agglomerations

#### MTG ../P
- Powder induction stage including housing and propeller
- Ø 45 - 300 mm
- Powder induction of light to heavy powders
- Suitable for powders used in chemical, pharmaceutical, cosmetic, biochemical and food industries

### MEGATRON MT-VP 65
- Model / Series: MT-VP 65
- Throughput liquid max.: 1000 l/h
- Suction capacity max.: 70 kg/h
- rpm max. (@50Hz): 10'600 rpm
- Rotor-Ø: 45 mm
- Drive Power: up to 4.0 kW

### MEGATRON MT-VP 95
- Model / Series: MT-VP 95
- Throughput liquid max.: 3000 l/h
- Suction capacity max.: 200 kg/h
- rpm max. (@50Hz): 7'700 rpm
- Rotor-Ø: 65 mm
- Drive Power: up to 11.0 kW

### MEGATRON MT-VP 160
- Model / Series: MT-VP 160
- Throughput liquid max.: 25'000 l/h
- Suction capacity max.: 1’200 kg/h
- rpm max. (@50Hz): 3’000 rpm
- Rotor-Ø: 95 mm
- Drive Power: up to 22.0 kW

### MEGATRON MT-VP 220
- Model / Series: MT-VP 220
- Throughput liquid max.: 40'000 l/h
- Suction capacity max.: 2’000 kg/h
- rpm max. (@50Hz): 2’300 rpm
- Rotor-Ø: 160 mm
- Drive Power: up to 55.0 kW

### MEGATRON MT-VP 300
- Model / Series: MT-VP 300
- Throughput liquid max.: 70'000 l/h
- Suction capacity max.: 3’500 kg/h
- rpm max. (@50Hz): 1’700 rpm
- Rotor-Ø: 300 mm
- Drive Power: up to 75.0 kW

### MEGATRON® MT-VPC / VPR Series
- In-line processors combining in a two-stage working chamber an effective powder induction stage with a homogenizing / suspending stage
- MT-VP series are specially designed for powder induction of light to heavy powders and making finest suspensions
- Maximum generated vacuum at the powder induction is approx. 25 mbar
- Pressure up to 6 bar standard, higher possible
- Temperature up to 90 °C standard, higher possible
- Viscosity from aqueous up to paste-like
The market of foamed products in the field of chemistry, pharma and food has heavily increased over the last few years. This not least because through the foaming process various product features can be adapted easier to modern trends and the quality and life time has considerably increased.

In collaboration with ETH Zürich KINEMATICA has brought to the market a new generation of foam processors with the series of MEGATRON® FM.

The striking feature of this series is the generation of smallest micro bubbles in the scale of 5 - 10 µm and its narrow distribution due to a brandnew rotor stator geometry.

We are happy to provide you with professional advice and to offer you all desirable accessories e.g. metering pumps with premixing container and mixer, cooling aggregate, process control.

Some typical applications in food are:
- foamed protein
- foamed dairy products
- foamed ice cream
- mousse-products
- foamed confectionary
- bread pastries
- foamed filling products
- and many more

### MT-FM SERIES

<table>
<thead>
<tr>
<th>Model / Series</th>
<th>Throughput liquid max.</th>
<th>Tip speed max.</th>
<th>rpm max.</th>
<th>Rotor-Ø</th>
<th>max. axial stages (./2 ../../6) design</th>
<th>Drive Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT-FM 30</td>
<td>10 l/h</td>
<td>24 m/s</td>
<td>12'000 rpm</td>
<td>30 mm</td>
<td>8 / 5</td>
<td>1.5 kW</td>
</tr>
<tr>
<td>MT-FM 50</td>
<td>40 l/h</td>
<td>26 m/s</td>
<td>10'000 rpm</td>
<td>50 mm</td>
<td>12 / 8</td>
<td>up to 7.5 kW</td>
</tr>
<tr>
<td>MT-FM 100</td>
<td>250 l/h</td>
<td>26 m/s</td>
<td>5'000 rpm</td>
<td>100 mm</td>
<td>18 / 20</td>
<td>up to 11.0 kW</td>
</tr>
<tr>
<td>MT-FM 150</td>
<td>700 l/h</td>
<td>24 m/s</td>
<td>3'000 rpm</td>
<td>150 mm</td>
<td>24 / 16</td>
<td>up to 22.0 kW</td>
</tr>
<tr>
<td>MT-FM 200</td>
<td>1'800 l/h</td>
<td>34 m/s</td>
<td>3'000 rpm</td>
<td>220 mm</td>
<td>30 / 20</td>
<td>up to 55.0 kW</td>
</tr>
<tr>
<td>MT-FM 300</td>
<td>4'000 l/h</td>
<td>24 m/s</td>
<td>1'500 rpm</td>
<td>300 mm</td>
<td>36 / 24</td>
<td>up to 90.0 kW</td>
</tr>
</tbody>
</table>

- MEGATRON® MT-FM series are axial flown through dispersing machines without pumping effects
- MEGATRON series are specially designed for gas dispersions with bubble sizes < 20 mm at an optimum of homogenization
- Overruns up to several 100% are possible depending on the product
- Pressure up to 10 bar standard, higher possible
- Temperature up to 95 °C standard, higher possible
- Viscosity aqueous up to paste-like
- MT-FM series can also be used very successfully for intensive mixing / homogenizing of emulsions and suspensions

### FOAM PRODUCTION

#### Dispersing Generators (choice) - Types, Diameters, Applications

- **FMG \(/2\)**
  - standard generator
  - rotor/stator with one teeth row (stage) each, coarse teeth
- **FMG \(/6\)**
  - standard generator
  - rotor/stator with one teeth row (stage) each, fine teeth
- **FMG \(\ldots /2\) Monoblock**
  - standard generator
  - rotor/stator with up to 36 teeth rows (stages) each, coarse teeth
- **FMG \(\ldots /6\) Monoblock**
  - standard generator
  - rotor/stator with up to 24 teeth rows (stages) each, fine teeth

<table>
<thead>
<tr>
<th>Ø 30, 50 mm</th>
<th>Ø 100 - 300 mm</th>
<th>Ø 100 - 300 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Foamed products with bubble sizes below 20 mm, depending on product</td>
<td>- Applications see FMG (/2)</td>
<td>- Applications see FMG (/6)</td>
</tr>
<tr>
<td>- Foamed protein, milk products, ice-cream, confectionary, filling products</td>
<td>- Mousse-products</td>
<td>- Technical foams</td>
</tr>
<tr>
<td>- Mousse-products</td>
<td>- Foamed products, dairy products, ice-cream, confectionary, filling products</td>
<td>- Pharmaceutical / medical foams</td>
</tr>
<tr>
<td>- Foamed fills, foamed sauces</td>
<td>- Mousse-products</td>
<td>- Food, foamed sauces</td>
</tr>
</tbody>
</table>

#### Options
- Temperature up to 95 °C standard, higher possible
- Viscosity aqueous up to paste-like
- MT-FM series can also be used very successfully for intensive mixing / homogenizing of emulsions and suspensions

#### Some applications in food are:
- foamed protein
- foamed dairy products
- foamed ice cream
- mousse-products
- foamed confectionary
- bread pastries
- foamed filling products
- and many more
KINEMATICA offers also a range of complete homogenizing and mixing plants for different applications in the chemical, pharmaceutical, cosmetic and food industry - known under the brand name REACTRON®.

REACTRON® systems are designed to customers' specifications and consist normally of the following components: processing tank with POLYMIX® stirring system for macro mixing, POLYTRON® / MEGATRON® homogenizing system for down sizing and micro mixing, piping, process control and further specific equipment like vacuum pumps, heating / cooling thermostats.

REACTRON® systems are available for batch and semi-batch operation with volumes starting from 1 liter up to several 100 liters. They can be designed and manufactured according to customer and application specifications, incl. pressure / vacuum, CIP / SIP, clean room design and ATEX regulations.

Some application examples:
- Producing of creams, lotions, emulsions
- Pharmaceutical or cosmetic products
- Dispersing of fine solids into a liquid or molten phase
- Suspending of additives and solid polymers in mineral oils
- Producing of dairy products and diet food
- Polymerisations
- Extracting of enzymes from bio masses
- and many more

### POLYTRON® Batch Homogenizer

<table>
<thead>
<tr>
<th>Model / Series</th>
<th>process vessel (***)</th>
<th>suitable POLYTRON® Batch Homogenizer (*)</th>
<th>suitable MEGATRON® Inline Homogenizer (*)</th>
<th>suitable POLYMIX® Stirrer (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT 1</td>
<td>1 l PT 2500 E</td>
<td>MT 3000</td>
<td></td>
<td>PX-SR 50 E / PX-SR 90 D</td>
</tr>
<tr>
<td>RT 2</td>
<td>2 l PT 10-35 GT</td>
<td>MT 3000</td>
<td></td>
<td>PX-SR 50 E / PX-SR 90 D</td>
</tr>
<tr>
<td>RT 5</td>
<td>5 l PT 3100 D</td>
<td>MT 3000</td>
<td></td>
<td>PX-SR 50 E / PX-SR 90 D</td>
</tr>
<tr>
<td>RT 10</td>
<td>10 l PT 3100 D</td>
<td>MT 3000</td>
<td></td>
<td>PX-SR 50 E / PX-SR 90 D</td>
</tr>
<tr>
<td>RT 15</td>
<td>15 l PT 6100 D, PT 7100, PT-D 36-60</td>
<td>MT 3000 / MT 5100</td>
<td></td>
<td>PX-SR 50 E / PX-SR 90 D</td>
</tr>
<tr>
<td>RT 40</td>
<td>40 l PT(-C) 60</td>
<td>MT(-V) 45</td>
<td></td>
<td>PX-RW 0.35</td>
</tr>
<tr>
<td>RT 50</td>
<td>50 l PT(-C) 80</td>
<td>MT(-V) 65</td>
<td></td>
<td>PX-RW 0.35</td>
</tr>
<tr>
<td>RT 100</td>
<td>100 l PT(-C) 80</td>
<td>MT(-V) 65</td>
<td></td>
<td>PX-RW 0.55</td>
</tr>
<tr>
<td>RT 500</td>
<td>500 l PT(-C) 120</td>
<td>MT(-V) 65</td>
<td></td>
<td>PX-RW 0.75</td>
</tr>
<tr>
<td>RT 1000</td>
<td>1'000 l PT(-C) 160</td>
<td>MT(-V) 95</td>
<td></td>
<td>PX-RW 1.5</td>
</tr>
</tbody>
</table>

(*) The cited products shall only be understood as reference. The choice of the suitable Batch or In-line Homogenizer and the Stirrer depends also on the product specifications, customer specifications and the environmental and process conditions.

(***) Process vessel can be made from different materials including stainless steel 304, 316L, 316Ti, borosilicate glass or made from specific material on request. Material of construction depends also on product specifications, customer specifications and the environmental and process conditions.

### POLYMIX® Stirrers (choice) - Types, Diameters, Applications

<table>
<thead>
<tr>
<th>Propeller Stirrer</th>
<th>Turbine Stirrer</th>
<th>Dissolver Stirrer</th>
<th>Anchor Stirrer</th>
</tr>
</thead>
<tbody>
<tr>
<td>standard stirrer</td>
<td>standard stirrer</td>
<td>standard stirrer</td>
<td>standard stirrer</td>
</tr>
<tr>
<td>available with 3 or 4 blades, also PTFE coated or from different materials</td>
<td>also PTFE coated or from different materials</td>
<td>available also with scrapers</td>
<td>available also with scrapers</td>
</tr>
</tbody>
</table>

- Propeller Stirrer:
  - Standard stirrer
  - Available in different sizes for all series
  - Available in different sizes for all series
  - Top-down suction of the fluid. Generates axial flow in the vessel. Low shear forces.

- Turbine Stirrer:
  - Standard stirrer
  - Available in different sizes for all series
  - Available in different sizes for all series
  - Radial flow. Top-down and bottom-up suction of the fluid. High turbulences, high shear forces, particle crushing.

- Dissolver Stirrer:
  - Available in different sizes for all series
  - Available in different sizes for all series
  - Available in different sizes for all series
  - Available in different sizes for all series
  - Radial flow. Top-down and bottom-up suction of the fluid. High turbulences, high shear forces, particle crushing.

- Anchor Stirrer:
  - Standard stirrer
  - Available also with scrapers
  - Available also with scrapers
  - Available also with scrapers
  - Available also with scrapers
  - Tangential flow, high shear rates in the border area. Few disposal at the vessel wall. Ideal for fluids with middle to high viscosity.
### HOMOGENIZING AND MIXING PLANTS

<table>
<thead>
<tr>
<th>REACTRON® RT 50</th>
<th>REACTRON® RT 100</th>
<th>RT 500</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>

#### POLYMIX® Stirrers
- POLYMIX® range of stirrers can be used for stirring and macro-mixing tasks in combination with a REACTRON® process vessel
- Different stirrer designs / sizes are available, like anchor stirrer, propeller stirrer, dissolver, ...

#### Process Vessels
- Process vessels as well as pre-mixing tanks can be designed to customer and product specifications
- Multi-wall vessels with double jacket and isolation can be supplied
- Lifting column for vessel cover can be supplied

#### Measuring Devices
- All necessary measuring devices for temperature, pressure, level, throughput, pH, viscosity, etc. can be supplied

#### PID
- KINEMATICA provides complete engineering services

#### Installation
- KINEMATICA provides complete installation services

#### Service
- Complete process control for manual, half-automatic and automatic operation can be engineered and supplied
- SPS control systems can be supplied

#### Tempering
- It is often necessary to control the temperature; suitable tempering devices can be supplied

#### Pumping / Injecting
- It is often necessary to pump different components between vessels and to feed the homogenizers; suitable pumping devices as well as injectors can be supplied

#### DOCU / IQ / OQ
- KINEMATICA provides complete documentation services including IQ / OQ

#### KINEMATICA provides complete after sales services
YOUR APPLICATION IS OUR FOCUS!

KINEMATICA is a leading manufacturer of dispersing and mixing technology for standard and customized applications in the lab, pilot plant and production areas of pharmaceutical, chemical, food, cosmetic and biotech or life science companies worldwide.

Our POLYTRON® batch and MEGATRON® In-line Homogenizers are suitable for many applications:

- Dispersing of non-soluble liquids or solids into liquids to finest emulsions/multiple emulsions or suspensions
- Induction and dispersion of powders into liquids
- Foaming by gas induction into liquids
- Disintegration of tissue samples for preparation in further analysis
- Dispersing of various samples for quality control

We also deliver POLYMIX® Micro Dry Grinding Mills and a variety of POLYMIX® and MICROTRON® Overhead Stirrers and Mixers.

Whatever your application, we are confident that our team of specialists, with over 60 years of experience, will provide the best solution for you.

YOUR SATISFACTION IS OUR GOAL!