LABORATORY & PILOT PLANT

HOMOGENIZING AND DISPERSING TECHNOLOGY

KINEMATICA
DISPERSING AND MIXING TECHNOLOGY
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, fluid or gaseous phase into a fluid 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 being dispersed in a more economical, faster and better way than with any other device.

What sets KINEMATICA apart:

– surplus customer value by professional advice - over 40 years of application knowledge and lead quality - ISO 9001 certified
– continuous improvements in the dispersing technology
– cooperation with scientists from Switzerland, Austria, Germany, China, Japan and USA for specific applications
– excellent quality solutions for dispersing applications in the chemical, biochemical, pharmaceutical, cosmetical 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 10 l/min up to 150'000 l/h
– results from the lab can be scaled-up to pilot plant and production
– equipment can be built 100% to customer and product specifications including IQ and OQ

KINEMATICA offers also 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 of one hand and ready-to-plug-in. The different parts will be well suited to customer wishes.

The solution for your homogenizing, dispersing, emulsifying, suspending, size reduction, wet milling, powder induction and foam producing application is offered by KINEMATICA.

For further information, a quotation or a personal demonstration just get in contact with us or fill-in our applications questionnaire on the web and send it back to us.
<table>
<thead>
<tr>
<th>Model / Series For volumes</th>
<th>Speed max.</th>
<th>Power</th>
<th>Further Description, Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLYMIX® Lab Stirrers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PX-MT</td>
<td>up to 40 l</td>
<td>2'000 rpm</td>
<td>190 W</td>
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<td></td>
<td></td>
<td></td>
<td>– Electronic speed control from 50 up to 2000 rpm</td>
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<td></td>
<td>– Working volume - up to 40 liter (water)</td>
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<td></td>
<td>– Max. torque - 80 Ncm</td>
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<td>– LCD-Display</td>
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<td></td>
<td>– Suitable for liquids with viscosity up to 50'000 mPa•s</td>
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<td>– Chuck can be fixed with only one hand - without tools</td>
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<tr>
<td>PX-HT</td>
<td>up to 70 l</td>
<td>1'200 rpm</td>
<td>190 W</td>
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<td></td>
<td></td>
<td></td>
<td>– Electronic speed control from 20 up to 1200 rpm</td>
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<td></td>
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<td>– Working volume - up to 70 liter (water)</td>
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<td>– Max. torque - 120 Ncm</td>
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<td>– Softstart for avoiding splashing and bubbles</td>
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<td></td>
<td>– Chuck can be fixed with only one hand - without tools</td>
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<tr>
<td>POLYMIX® Lab Grinding Mills</td>
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<tr>
<td>PX-MFC 90 D</td>
<td></td>
<td>6'000 rpm</td>
<td>1000 W</td>
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<td></td>
<td>– High power model (1.0 kW, 3-phase motor)</td>
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<td>– Low noise level, &lt;70 db(A) w/o load</td>
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<td></td>
<td></td>
<td></td>
<td>– Integrated speed control with LED for speed indication and status messages</td>
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<td>– Integrated overheating, overload and blocking protection</td>
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<td>– Safety switch for automatic-Off, energy saving through automatic Standby-Mode</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>– Base frame made from anodised aluminium with integrated handle</td>
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</tbody>
</table>

**POLYTRON**

**MEGATRON**

**REACTRON**

**MICROTRON**
POLYTRON® batch homogenizer for lab and pilot plant cover working volumes from about 0.1 ml up to about 50 liters. Basic models up to electronically controlled drive systems with computer interfaces are available and handle reliable different dispersing tasks.

The batch homogenizers are classified into lab handheld, small, medium and large benchtop units and pilot plant versions.

All POLYTRON® homogenizers to convince with the following features:
- quick coupling for the dispersing aggregates
- powerful and safe drive systems – high speed levels / extreme high tip speeds
- intelligent regulations and / or controllers
- digital displays or readable scales
- long working life

From over 40 different and exchangeable POLYTRON® dispersing aggregates the optimum for each specific homogenizing application can be chosen.

The efficiency of POLYTRON® dispersing aggregates is unrivalled until now. Thanks to optimized shear forces and bounce effects the processed medium will be treated at finest level in shortest time.

POLYTRON® dispersing aggregates with EC design (standard) can be disassembled with effortless ease, are easily cleaned and can be sterilized / autoclaved according to all current methods.

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**POLYTRON® PT 10-35 GT**
- 0.1 - 10’000 ml
- 30’000 rpm
- 1.5 kW
- 5 - 36 mm
- 78 - 250 mm
- 3,8,10,11,13,14

**POLYTRON® PT 1200 E**
- 0.05 - 2000 ml
- 40’000 rpm
- 1000 W
- 3 - 25 mm
- 50 - 170 mm
- 1,9,11,14

**POLYTRON® PT 2500 E**
- 0.05 - 2000 ml
- 50’000 rpm
- 300 W
- 3 - 25 mm
- 50 - 170 mm
- 1,7,8,9,11,14

**POLYTRON® PT 4000**
- 0.05 - 2000 ml
- 70’000 rpm
- 500 W
- 3 - 25 mm
- 50 - 170 mm
- 2,7,8,9,11,14

**Further Descriptions / Options**
1. Handheld Homogenizer Lab
   - 8 Digital display
2. Benchtop Homogenizer Lab „small“
   - 9 Quick Coupling type E for Dispersing Aggregates
3. Benchtop Homogenizer Lab „medium“
   - 10 Quick Coupling type F for Dispersing Aggregates (also Dispersing Aggregates with coupling type B can be connected)
4. Benchtop Homogenizer Lab „large“
   - 11 Dispersing aggregate in EC design; easily disassembled and cleaned/stereilized
5. Pilot Plant Batch Homogenizer
   - 12 Dispersing aggregates / shafts available as C (PT-C series) design for CIP
6. ATEX versions available (standard IIG-T3 - Zone 1)
   - 13 Dispersing aggregates available with mechanical seal systems for pressure and/or vacuum applications
7. PC connection and User Interface Software available
   - 14 Special shaft lengths possible

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**POLYTRON® Generator (PTG)**
- PTG 5/2
  - Standard generator rotor/stator with one teeth row each
- PTG 7/2
  - Standard generator rotor/stator with one teeth row each
- PTG 12/2
  - Standard generator rotor/stator with one teeth row each
- PTG 20/2
  - Standard generator rotor/stator with one teeth row each
- PTG 20/2M Special M-Generator
  - Rotor with knife rotor/stator with one teeth row each
- PTG 20/2W Special W-Generator
  - Rotor with knife rotor/stator with one teeth row each
- PTG 30/2Z Special Z-Generator
  - Rotor with knife rotor/stator with one teeth row each

**Maximum Tip Speed**
- 6 m/s
- 8 m/s
- 14 m/s
- 21 m/s
- 21 m/s
- 21 m/s
- 34 m/s

**Working volume**
- 0.3 - 10 ml
- 3 - 250 ml
- 20 - 2000 ml
- 20 - 2000 ml
- 20 - 2000 ml
- 100 - 4000 ml

**Applications**
- Dispersing cells and tissues in a small amount of liquid
- Disolving solids
- Extractions
- Dispersing plant, human or animal tissues, resins and pigments
- Disolving solids
- Extractions
- Producing suspensions and emulsions
- Dispersing and mixing particles up to 10 mm in size
- Sample preparation for extraction and solution organic material
- Intensive mixing
- Rotor with knife facilitate the processing larger cell tissue samples or particles
- Dispersing fibrous, stringy and brittle samples (e.g. flesh)
- Breaking open and dispersing pills, capsules and hard large grains

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**Further Descriptions / Options**
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---

**POLYTRON® PT 1200 E**
- 0.05 - 200 ml
- 28’000 rpm
- 100 W
- 3 - 12 mm
- 50 - 123 mm
- 1,9,11,14

**POLYTRON® PT 1300 D**
- 0.05 - 200 ml
- 30’000 rpm
- 100 W
- 3 - 12 mm
- 50 - 123 mm
- 1,7,8,9,11,14

**POLYTRON® PT 2500 E**
- 0.05 - 2000 ml
- 30’000 rpm
- 500 W
- 3 - 25 mm
- 50 - 170 mm
- 2,8,9,11,13,14

**POLYTRON® PT 4000**
- 0.05 - 2000 ml
- 40’000 rpm
- 500 W
- 3 - 25 mm
- 50 - 170 mm
- 2,7,8,9,11,14

**POLYTRON® PT 10-35 GT**
- 0.1 - 10’000 ml
- 30’000 rpm
- 1200 W
- 5 - 36 mm
- 78 - 250 mm
- 3,8,10,11,13,14

**POLYTRON® PT 3100 D**
- 0.1 - 10’000 ml
- 30’000 rpm
- 1200 W
- 5 - 36 mm
- 78 - 250 mm
- 3,7,8,10,11,13,14
**POLYTRON® PT 4000**

- Rotor/stator with one teeth row each
- Standard modell, available for system
- Intensive mixing
- Pre-crushing of organic materials
- Suspending, deagglomeration,
- Dispersing, mixing and dissolving of solids in liquids
- Up to 5 l/min (depends on the medium)
- Up to 11 l/min (depends on the medium)
- Up to 7 l/min (depends on the medium)
- Up to 6 l/min (depends on the medium)
- Up to 55 l/min (depends on the medium)

**POLYTRON® PT 10-35 GT**

- Rotor/stator with two teeth rows each
- Standard modell, available for systems
- Acceleration of reactions and chemical processes
- Producing of microspheres
- Crushing of fibers and tissue materials in liquids
- Gassing of liquids
- Extractions
- Precipitations

**POLYTRON® PT 3100 D**

- Rotor/stator with one teeth row each
- Standard modell, available for system
- Intensive mixing
- Crushing of lumps
- Mixing of fluids
- Extracts
- Size reduction of coarse solids in liquid
- Dispersing and mixing of coarse solids

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**KINEMATICA offers a complete series of batch working homogenizers suitable for volumes from 0.05 ml up to 10'000 liters.**

Test results obtained with lab units can be used as a reliable data source for a scale-up step to the larger POLYTRON® pilot plant and production machines.

**PTG 30/4TiN**

- Special generator
- Rotor/stator with two teeth rows each
- 34 m/s
- 200 - 4000 ml
- Fine emulsions and suspensions
- Mixes and reduces highly intensive solids into fluids
- Gasses solutions
- Separate fibres and cellular material into very small particles
- Extractions
- Applications with abrasive components
- Dispersing fibrous, stringy and brittle samples (e.g. flesh)

**PTG 36/2**

- Standard generator
- Rotor/stator with one teeth row each
- 34 m/s
- 200 - 4000 ml
- Fine emulsions and suspensions
- Mixes and reduces highly intensive solids into fluids
- Gasses solutions
- Separate fibres and cellular material into very small particles
- Extractions

**PTG 36/2W**

- Special W-Generator
- Rotor/stator with one teeth row each
- 34 m/s
- 200 - 4000 ml
- Working under pressure / vacuum
- Finest emulsions and suspensions
- Mixes and reduces highly intensive solids into fluids
- Gasses solutions
- Separate fibres and cellular material into very small particles
- Extractions
- Prevents foam built-up

**PTG 36/4**

- Special G-Generator
- Rotor/stator with three teeth rows each
- 34 m/s
- 200 - 2500 ml
- High turbulent mixing with low shear forces
- Fast dissolving and suspending of solids also at higher viscosity
- Intensive mixing
- Dispersing and mixing of particles up to 20 mm in size
- Sample preparation for extraction and solution of organic material

**PTG 40/2**

- Standard generator
- Rotor/stator with one teeth row each
- 36 m/s
- 200 - 5000 ml

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**USER SOFTWARE**

- Suitable for PC’s using MS-Windows
- Possibility of data logging into MS-Excel-sheets for all parameters
- Programmable Speed-Time-Profiles for automatic operation
- Programmable temperature limits for use as stopping criteria to avoid product overheating
- Graphical parameter visualization in time-based diagram
- Written parameter visualization in text boxes
- Drive health and status is displayed
- Available for PT 3100 D, PT 6100 D and PT 1300 D
The selection of the right dispersing aggregate and the right drive system depends on the application: treated medium, viscosity, processing time, volume, etc. KINEMATICA don’t leave you alone with these difficult questions. Our applications team would like to discuss with you the right system components for successful working in accordance to a filled-in questionnaire or a test run in our laboratory.

A short overview about available dispersing aggregates and systems shall give you a first information.

<table>
<thead>
<tr>
<th>Aggregates</th>
<th>Ø 3 mm</th>
<th>Ø 5 mm</th>
<th>Ø 7 mm</th>
<th>Ø 12 mm</th>
<th>Ø 20 mm</th>
<th>Ø 25 mm</th>
<th>Ø 30 mm</th>
<th>Ø 40 mm</th>
<th>Ø 45 mm</th>
<th>Ø 50 mm</th>
<th>Ø 60 mm</th>
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</thead>
<tbody>
<tr>
<td>PT 1200 E</td>
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<tr>
<td>PT 1300 D</td>
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<td>PT 2500 E</td>
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<td>PT 4000</td>
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<tr>
<td>PT 10-35 GT</td>
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<td>PT 3100 D</td>
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<tr>
<td>PT 6100 D</td>
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<tr>
<td>PT 7100</td>
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<tr>
<td>PT-D 36-60 (EX)</td>
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</tr>
</tbody>
</table>

+ limited adapted      ++ well adapted      +++ very well adapted

Which aggregates are available for my drive system?

Which designs are available for my dispersing aggregate?
**Polytron® Dispersing Aggregates**

**Safe and Fast Quick Couplings**

**The Right Dispersing Vessel**

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**Polytron® Generator PTG**

- **Special M-Generator**
- **Maximum Tip Speed**: 36 m/s
- **Rotor with Knives**
- **Working Volume**: teeth row each
  - 200 - 4000 ml
  - 200 - 5000 ml
  - 200 - 6000 ml
- **Dispersing of Fibrous, Stringy and Brittle Samples (e.g. Flesh)**
- **Intensive Mixing**
- **Sample Preparation for Dispersing and Mixing of Organic Material**
- **Extraction and Solution of Particles up to 22 mm in Size**

**Rotor/Stator with One Teeth Row Each**

<table>
<thead>
<tr>
<th><strong>PTG 45/2</strong></th>
<th><strong>PTG 45/2M</strong></th>
<th><strong>PTG 50/2</strong></th>
<th><strong>PTG 50/2M</strong></th>
<th><strong>PTG 50/6G</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Working Volume</strong>: teeth row each</td>
<td>36 m/s</td>
<td>36 m/s</td>
<td>40 m/s</td>
<td>40 m/s</td>
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<tr>
<td><strong>Dispersing of Fibrous, Stringy and Brittle Samples (e.g. Flesh)</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td><strong>Intensive Mixing</strong></td>
<td>+</td>
<td>+</td>
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<td>+</td>
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<tr>
<td><strong>Sample Preparation for Dispersing and Mixing of Organic Material</strong></td>
<td>+</td>
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<td>+</td>
</tr>
<tr>
<td><strong>Extraction and Solution of Particles up to 22 mm in Size</strong></td>
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<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

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**Biotrona®**

- **For Hard and Brittle Material**
- **High Turbulences, Low Shear Forces**

**Design „Stator Tube“**

<table>
<thead>
<tr>
<th>Aggregates</th>
<th>Ø 3 mm</th>
<th>Ø 5 mm</th>
<th>Ø 7 mm</th>
<th>Ø 12 mm</th>
<th>Ø 20 mm</th>
<th>Ø 25 mm</th>
<th>Ø 30 mm</th>
<th>Ø 36 mm</th>
<th>Ø 40 mm</th>
<th>Ø 45 mm</th>
<th>Ø 50 mm</th>
<th>Ø 60 mm</th>
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<tbody>
<tr>
<td>Slotted</td>
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<td>EC (Standard)</td>
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**Design „R/S-Head“**

<table>
<thead>
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<th>Ø 5 mm</th>
<th>Ø 7 mm</th>
<th>Ø 12 mm</th>
<th>Ø 20 mm</th>
<th>Ø 25 mm</th>
<th>Ø 30 mm</th>
<th>Ø 36 mm</th>
<th>Ø 40 mm</th>
<th>Ø 45 mm</th>
<th>Ø 50 mm</th>
<th>Ø 60 mm</th>
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<tbody>
<tr>
<td>_2 (R/S with 1TR each)</td>
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<tr>
<td>_4 (R/S with 2TR each)</td>
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<tr>
<td>_6 (R/S with 3TR each)</td>
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<td>M Rotor</td>
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<tr>
<td>W Stator</td>
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<tr>
<td>Z Stator</td>
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</tbody>
</table>

**BIOTRONA**

- **Easy-Clean, easy disassembled, easy cleaned or sterilized**
- **Prevents additional air induction**
- **Pressure, vacuum, anti-foam, with mechanical seal**

**PTG 10/2M Special M-Generator**

- Rotor with knives
- Rotor/stator with one teeth row each

<table>
<thead>
<tr>
<th><strong>Working Volume</strong>: teeth row each</th>
<th>44 m/s</th>
<th>44 m/s</th>
<th>47 m/s</th>
<th>50 m/s</th>
<th>50 m/s</th>
<th>50 m/s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dispersing and Mixing of Particles up to 25 mm in Size</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Sample Preparation for Extraction and Solution of Organic Material</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Intensive Mixing</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Rotating with Knives Facilitate the Processing of Larger Cell Tissue Samples or Particles</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

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**PTG 50/2**

- **Standard Generator**
- Rotor/stator with one teeth row each

**PTG 80 DI**

- **Special Dissolver Disk**
- Rotor/stator with three teeth rows each

**PTG 60/2W Special W-Generator**

- **Dispersing and Mixing of Particles up to 30 mm in Size**
- **Sample Preparation for Extraction and Solution of Organic Material**
- **Intensive Mixing**
- **Rotor with Knives Facilitate the Processing of Larger Cell Tissue Samples or Particles**
- **Extractions**
With the type series MEGATRON® MT and MEGATRON® MT-V KINEMATICA has set standards once more for the inline 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.

Inline homogenizer for pilot plant and production:
- Throughputs from 50 l/h up to approx. 150,000 l/h
- high speed levels and tip speeds up to approx. 50 m/s
- adjustable drive systems with power levels between approx. 1.2 kW and 100 kW
- dispersing generators with rotor diameters between 15 mm and 300 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 nanometer 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 treated products

MEGATRON® DISPERSING AND MIXING TECHNOLOGY BY KINEMATICA

Some typical applications in food are: foamed protein, foamed milk products, foamed ice cream, metering pumps with premixing container and mixer, cooling aggregate, process control.

The extremely effective foam processor MEGATRON FM works constantly and is available in different versions for laboratory and pilot plant size for product and recipe development with some liter throughput and in various sizes/performances for the production up to several 1000 liters throughput considering different working and environmental conditions.

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

A 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.

Some typical applications in food are: foamed protein, foamed milk products, foamed ice cream, mousse-products, foamed confectionary, bread pastries and foamed filling products.

MEGATRON® Generator MTG

Type MTG 30/2 M generator
- Standard modell, available for systems MT 3100 S
- Rotor/stator with one teeth row each

Maximum Tip Speed
24 m/s

Throughput
Up to 11 l/min (depends on the medium)

Applications
- Dispersing, mixing and dissolving of solids in liquids
- Suspendend, deagglomeration, extraction
- Pre-crushing of organic materials in liquids
- Intensive mixing

Type MTG 30/4 F generator
- Standard modell, available for system MT 3100 S
- Rotor/stator with two teeth rows each

Maximum Tip Speed
41 m/s

Throughput
Up to 7 l/min (depends on the medium)

Applications
- Producing of fine suspensions and emulsions
- Intensive dissolving of solids
- Gassing of liquids
- Crushing of fibers and tissue materials in liquids
- Producing of microspheres
- Acceleration of reactions and chemical precipitations
- In general for applications which requires high shear rates

Type MTG 30/4 FFV generator
- Standard modell, available for system MT 3100 S
- Rotor/stator with two teeth rows each

Maximum Tip Speed
42 m/s

Throughput
Up to 6 l/min (depends on the medium)

Applications
- Producing of super fine suspensions and emulsions (very small droplet sizes)
- Gassing of liquids
- Crushing of fibers and tissue materials in liquids
- Producing of microspheres
- Acceleration of reactions and chemical precipitations
- In general for applications which requires high shear rates

Type MTG 30/2M generator
- Standard modell, available for systems MT 5100 S
- Rotor/stator with one teeth row each

Maximum Tip Speed
38 m/s

Throughput
Up to 5 l/min (depends on the medium)

Applications
- Dispersing and mixing of coarse solids into liquid
- Size reduction of coarse solids in liquid
- Extractions
- Mixing of fluids
- Crushing of lumps
- Intensive mixing

Technical specification is indicative.
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 customer 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 in accordance with the customer, the product and the process.

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 cremes, 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
- Wet milling and dispersing of solids, fibers, stringy materials, tissues, cells into fluids and polymers
- Producing of diary products and diet food
- Polymerisations
- Extracting of enzymes from biomass
- and further more ...

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

<table>
<thead>
<tr>
<th>Model / Series</th>
<th>Drive Power</th>
<th>Rotor ø</th>
<th>Throughput l/h liquid</th>
<th>Suction capacity kg/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT-VP 45</td>
<td>up to 4.0 kW</td>
<td>45 mm</td>
<td>1000</td>
<td>70</td>
</tr>
<tr>
<td>MT-VP 65</td>
<td>up to 11.0 kW</td>
<td>65 mm</td>
<td>3000</td>
<td>200</td>
</tr>
</tbody>
</table>

After several years of development KINEMATICA succeeded in introducing to the market an extremely efficient powder dispersing machine with the series MEGATRON MT-VP.

Advantages of the new developed system 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 add-on 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.

So enlarges the new MEGATRON MT-VP powder dispersing machine with its convective powder wetting system and a wide range of various dispersing generators the application in the field of chemistry, pharma and food.

Technical specification is indicative.
POLYMIX® PX-MT (Medium-throughput) stirrer for simple and efficient homogenising applications, includes the drive with a light and well readable LCD-Display showing speed, actual number of rotations, torque and remaining time of processing.

The POLYMIX® PX-HT (High-throughput) stirrer for processing of high viscous products includes drive and unique KINEMATICA POLYMIX® KD-stirrer, drive holder, vessel holder and ST-P 20/600 plate-stand.

The lab mill POLYMIX® PX-MFC 90 D with exchangeable milling attachments and sieves with mesh sizes from 0.2 to 6 mm is suitable for all dry milling applications in the lab. Thanks to the powerful drive unit with LED display and high speed level the mill can process dried, non-fatty, hard and brittle products such as Cereals, corn, roasted coffee, beans, bones, stone, mortar, etc., as well as dried, non-fatty, stringy and ductile products such as Wood, leaves, straw, dried degreased meat, wool, cotton, paper, synthetic materials, etc.

The systems MICROTRON® MB 550 and MB 800 are specially designed for mixing, dispersing, homogenizing, emulsifying and size reduction of cuttable materials. The MB 550 is available with different attachments made from glass for volumes between 125 and 1000 ml. The MB 800 is available with mixing attachments made from stainless steel with volumes of 2 l and 4 l. The systems MB 550 and MB 800 are safety laboratory devices – grounded, double safety isolated, radio screened. A safety system prevents uncontrolled starting and therewith personal injuries.

The POLYMIX® PX-MT is available with 3 or 4 blades, the vessel generates axial flow in the fluid. Local shear forces.

Top-down suction of the fluid. Low shear forces.

The POLYMIX® PX-HT is favorable to flow. Top-down and bottom-up suction of the fluid. Few lacerations in the border area. Few disposal at the vessel wall. Use at low speeds. Ideal for fluids with middle to high viscosity.

The POLYMIX® PX-MFC 90 D is suitable for all dry milling applications. Thanks to the powerful drive unit with LED display and high speed level the mill can process dried, non-fatty, hard and brittle products such as Cereals, corn, roasted coffee, beans, bones, stone, mortar, etc., as well as dried, non-fatty, stringy and ductile products such as Wood, leaves, straw, dried degreased meat, wool, cotton, paper, synthetic materials, etc.

The systems MICROTRON® MB 550 and MB 800 are specially designed for mixing, dispersing, homogenizing, emulsifying and size reduction of cuttable materials. The MB 550 is available with different attachments made from glass for volumes between 125 and 1000 ml. The MB 800 is available with mixing attachments made from stainless steel with volumes of 2 l and 4 l. The systems MB 550 and MB 800 are safety laboratory devices – grounded, double safety isolated, radio screened. A safety system prevents uncontrolled starting and therewith personal injuries.

### POLYMIX® Lab Stirrers

<table>
<thead>
<tr>
<th>Model / Series</th>
<th>For volumes</th>
<th>Speed max.</th>
<th>Power</th>
<th>Further Description, Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POLYMIX® PX-MT</strong></td>
<td>up to 4 l</td>
<td>2’000 rpm</td>
<td>190 W</td>
<td>Electronic speed control from 50 up to 2000 rpm</td>
</tr>
<tr>
<td>Automatic Mortar/ Pestle homogenizing system</td>
<td>up to 20 l</td>
<td>1’200 rpm</td>
<td>190 W</td>
<td>Electronic speed control from 20 up to 1200 rpm</td>
</tr>
<tr>
<td><strong>POLYMIX® PX-HT</strong></td>
<td>up to 70 l</td>
<td>1’200 rpm</td>
<td>190 W</td>
<td>Electronic speed control from 20 up to 1200 rpm</td>
</tr>
<tr>
<td>Stirrer for high viscous applications</td>
<td>300 ml (funnel)</td>
<td>6’000 rpm</td>
<td>1000 W</td>
<td>High power model (1.0 kW, 3-phase motor)</td>
</tr>
</tbody>
</table>

### POLYMIX® Lab Grinding Mills

<table>
<thead>
<tr>
<th>Model / Series</th>
<th>For volumes</th>
<th>Speed max.</th>
<th>Power</th>
<th>Further Description, Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POLYMIX® PX-MFC 90 D</strong></td>
<td>up to 70 liter (water)</td>
<td>1’200 rpm</td>
<td>190 W</td>
<td>Electronic speed control from 50 up to 2000 rpm</td>
</tr>
<tr>
<td>– Electronic speed control from 50 up to 2000 rpm</td>
<td>– Working volume - up to 40 liter (water)</td>
<td>– Max. torque - 80 Ncm</td>
<td>– Suitable for liquids with viscosity up to 50’000 mPa•s</td>
<td></td>
</tr>
<tr>
<td>– LPC-Display</td>
<td>– Suitable for liquids with viscosity up to 100’000 mPa•s</td>
<td>– Chuck can be fixed with only one hand - without tools</td>
<td>– Chuck can be fixed with only one hand - without tools</td>
<td></td>
</tr>
</tbody>
</table>

### Other POLYMIX® Stirrers

- **Propeller stirrer**
  - Standard stirrer available with 3 or 4 blades, Ø 45 - 100 mm
- **Turbine stirrer**
  - Standard stirrer, Ø 30 mm
- **Dissolver**
  - Standard stirrer, Ø 80 mm
- **Centrifugal stirrer**
  - Standard stirrer, Ø 60/15 mm
- **Flat stirrer**
  - Standard stirrer, Ø 70 mm
- **Anchor stirrer**
  - Standard stirrer, Ø 45 mm
- **Potter**
  - Special stirrers, Ø 8-25 mm available with / without cooling jacket

### Maximum Speed

- **2000 rpm**
- **2000 rpm**
- **2000 rpm**
- **1000 rpm**
- **1000 rpm**
- **1000 rpm**

### Working Volume

- **up to 25'000 ml**
- **up to 10'000 ml**
- **up to 10’000 ml**
- **up to 10’000 ml**
- **up to 10’000 ml**
- **up to 10’000 ml**

### Applications

- **Top-down suction of the fluid. Low shear forces.**
- **Radial flow. Top-down and bottom-up suction of the fluid. High turbulence.**
- **Two blade stirrer. Open up at increasing speed. For stirring in round bottles with small bottle neck. Acts like a propeller stirrer.**
- **Tangential flow. Low turbulence. Good heat transfer. Sparing treatment of the product.**
- **Tangential flow, high shear rates in the border area. Few disposal at the vessel wall. Use at low speeds. Ideal for fluids with middle to high viscosity.**
- **Consisting of a mortar (bo-nickel glass) and a pestle (PTFE). For homogenizing smallest amounts of tissue, palping of cells and bacteria. No additional fluid necessary.**
Hammer grinding attachment  
Consisting of rotor with 3 impact hammers and stator with place for one exchangeable sieve

Blade grinding attachment  
Consisting of rotor with 3 attached blades and stator with place for one exchangeable sieve

Sieves  
Available with mesh sizes from 0.2 mm up to 6 mm, for PX-MFC 90 D

Mixing attachments  
Consisting of mixing head and vessel from glass (MB 550) or stainless steel (MB 800), safety huts for MB 550 mixing attachments to be ordered separately

Applications
- The impact grinding mill attachment is designed for processing dried, non-fatty, hard and brittle products such as:
  - Cereals, corn, malt, pectin, raw & roasted coffee, beans, oats, nutshell, bones, fins (fish), gravel, stone, amber, mortar, etc.
- The blade grinding mill attachment is designed for processing dried, non-fatty, stringy and ductile products such as:
  - Wood, bark, roots, leaves, straw, cork, dried fruits, dried degreased meat, adrenoids, fish, feathers, leather, dermis, wool, cotton, leashes, paper, coal, turf, dried resins, synthetic materials, fibre glass, plastic pellets, different textiles, felt, etc.

Maximum Speed
50 - 6,000 rpm

Working volume
approx. 300 ml (funnel volume)

Applications
- Milling chamber with attached funnel and rotary slide for product inlet; intercepting tubes and NS29 vessels can be attached to milling chamber outlet
- Milling chamber can be equipped with hammer grinding or blade grinding attachment
- Grinding attachments can be exchanged
- Milling chamber can be equipped with sieves in different mesh sizes from 0.2 up to 6 mm
- Milling chamber parts in contact with the product are made from stainless steel hardened
- Packing unit consists of drive unit with milling chamber, grinding attachment, sieve 2.0 mm and tool set

Model / Series | For volumes | Speed max. | Power | Further Description, Options
---|---|---|---|---
POLYMIX® Lab Grinding Mills
PX-MFC 90 D (continued) | 300 ml (funnel) | 6'000 rpm | 1000 W | - Milling chamber with attached funnel and rotary slide for product inlet; intercepting tubes and NS29 vessels can be attached to milling chamber outlet  
- Milling chamber can be equipped with hammer grinding or blade grinding attachment  
- Grinding attachments can be exchanged  
- Milling chamber can be equipped with sieves in different mesh sizes from 0.2 up to 6 mm  
- Milling chamber parts in contact with the product are made from stainless steel hardened  
- Packing unit consists of drive unit with milling chamber, grinding attachment, sieve 2.0 mm and tool set

MICROTRO® Mixers
MB 550 | 125 - 1'000 ml | 14'000 rpm | 550 W | - 550 W high temperature safe universal motor with fan  
- Speed variable from 600-14000 rpm, soft start, speed scale  
- Thermitral drive safety switch, electronical surveillance and stabilisation of the speed  
- Safety regulation for attachment surveillance, grounded with extra double safety isolation, radio screened  
- Mixing attachments made from glass available for volumes 125, 250, 500 and 1000 ml (safety huts to be ordered separately)

MB 800 | 2 l - 4 l | 14'000 rpm | 800 W | - As above but 800 W high temperature safe universal motor with fan  
- Mixing attachments made from stainless steel for volumes 2 and 4 liters

Model / Series | For volumes | Speed max. | Power | Further Description, Options
---|---|---|---|---
POLYMIX® PX-MFC 90 D | approx. 300 ml (funnel volume) | 6'000 rpm | 1000 W | - Milling chamber with attached funnel and rotary slide for product inlet; intercepting tubes and NS29 vessels can be attached to milling chamber outlet  
- Milling chamber can be equipped with hammer grinding or blade grinding attachment  
- Grinding attachments can be exchanged  
- Milling chamber can be equipped with sieves in different mesh sizes from 0.2 up to 6 mm  
- Milling chamber parts in contact with the product are made from stainless steel hardened  
- Packing unit consists of drive unit with milling chamber, grinding attachment, sieve 2.0 mm and tool set

MICROTRO® MB 550 | approx. 300 ml (funnel volume) | 14'000 rpm | 550 W | - 550 W high temperature safe universal motor with fan  
- Speed variable from 600-14000 rpm, soft start, speed scale  
- Thermitral drive safety switch, electronical surveillance and stabilisation of the speed  
- Safety regulation for attachment surveillance, grounded with extra double safety isolation, radio screened  
- Mixing attachments made from glass available for volumes 125, 250, 500 and 1000 ml (safety huts to be ordered separately)

MICROTRO® MB 800 | approx. 300 ml (funnel volume) | 14'000 rpm | 800 W | - As above but 800 W high temperature safe universal motor with fan  
- Mixing attachments made from stainless steel for volumes 2 and 4 liters
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!