Process Technology

- Dispersing
- Homogenizing
- Emulsifying
- Mixing
- Stirring
- Wet milling

German technology made in the USA
Established in 1985, IKA® Works in Wilmington, North Carolina is the cornerstone for the IKA® company group in North-America. More than 60 employees develop and produce IKA® quality products for the North-American market. Our US facilities encompass the following:

- Direct Manufacturing site
- Research and Development
- Quality Control and Engineering
- Warehouse of inventory parts
- Engineered Systems and Custom Machine Designs
- Pilot Plant
- Trial Equipment and Accessories

Approximately 300 employees work at the headquarters in Staufen, Germany. Around 80 of them equal the process technology division, which contributes to the success of the IKA® group. The IKA® machines and laboratory equipment produced here are world-wide leaders in regards to function and design.

Established in 1995, IKA® Works (Asia) in Kuala Lumpur, Malaysia is responsible for the entire Far East with about 50 employees.

IKA® China in Guangzhou, 220 km north-west of Hongkong, was founded at the end of 1998. This is our production location for the Chinese market.
During the past decades the process equipment division of IKA® has attained a leading position in the mixing industry, as well as engineered systems. This presence was established and strengthened by the IKA® innovative technology. Our high-quality stirring, mixing and kneading machines are widely used in the pharmaceutical, chemical, food, color and dye, cosmetics, as well as the plastics industries.

IKA® is ranked in the top worldwide for laboratory technology. Our innovations prove the increasing dynamics of the company. IKA® was honored with the “Design Innovation 2000 with the red ribbon for the highest design quality,” among other awards. Even in the strongly disputed US market IKA® Works USA is well established. Mixing, particle size reduction and heating/cooling technology, that’s IKA®.

Analytical technology is closely linked to the IKA® laboratory division. The analytical technology of the IKA group ranks among the leaders of the international laboratory experts in the fields of calorimeters, oxidation decomposition and element determination. The IKA® analytical division has been striving for the leading position in the world market during the past few years, and is increasingly climbing the ranks.
The machine program of IKA®, is as diverse as the mixing industry itself. We specialize in solving the most difficult mixing applications for the processing industries.

In order to provide a solution for almost any mixing application, we have developed a new modular series of machines. The new IKA® 2000 series offers more options than any other in the mixing industry, including; wet milling, high shear dispersing, powder-liquid incorporation, and more!

For batch processes, IKA® offers a complete line of high quality stirring, mixing and dispersing machines.

Continuous research and development, along with applying many years of experience, is the basis of the IKA® philosophy.

Partnering with customers and research universities, IKA®, is continuously developing new technologies and applications.

<table>
<thead>
<tr>
<th>Stands</th>
<th>Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile stands SF…</td>
<td>Dilution Plants</td>
</tr>
<tr>
<td>Floor stands SB…</td>
<td>Continuous Mixing Systems</td>
</tr>
<tr>
<td>Wall stands SW…</td>
<td>Batch Systems</td>
</tr>
</tbody>
</table>

Kneaders 38-39
### Stirring
- **ROTOTRON® - Jet Flow Agitator** 26
- **TURBOTRON® - Stirrers and Agitator** 27

### Batch Mixing
- **ULTRA-TURRAX®** 24
- **LABORATORY MIXERS** 23
- **Top Entry - UTC and UTS** 24
- **Bottom Entry - UTE** 25

### Inline Mixing
- **IKAI® 2000 SERIES** 8-9
- **LABORATORY & PROCESS PILOT** 10-11
- **Single Stage UTL 2000 ULTRA-TURRAX®** 12-13
- **Multiple-Stage DR 2000 DISPAX-REACTOR** 14
- **Multiple-Stage DRS 2000** 15
- **COLLOID MILL MK 2000** 16
- **CONE MILL MKO 2000** 17

### Powder-Liquid Mixers
- **MHD 2000** 18-19
- **CMS 2000** 20-21
- **Masterplant MP 2000** 30-33
Used in a wide range of industries & applications

**Industries:**
- Food
- Chemical
- Pharmaceutical & Biological
- Personal Care & Toiletry
- Household & Institutional Products
- Cosmetics

**Applications:**

**Emulsifying - liquid / liquid systems**
- margarine
- ice cream
- proteins
- creams and lotions
- salad dressings and sauces
- micro-encapsulations

**Wet Milling / Suspending - liquid / solid systems**
- titanium dioxide
- pigments
- metals
- polishing agents
- seeds
- carbon black
- paraffin
- cosmetics
- mineral oils
- silicon oils
- pesticides and herbicides
- waxes

**Homogenizing - concentrating particle size distribution**
- flavors and essences
- creams
- coatings
- inks and lacquers
- fruit punches
- tooth paste
- dressings
- cheese spreads
- jams
- spice concentrates

**Dissolving - molecular / colloidal**
- dyes
- crystal powders
- salts
- detergents
- sugar
- binding agents
- hydrocolloids
- elastomers
- resins
- thixotropic agents

**Powder - Liquid Incorporation**
- starches
- fumed silica
- milk solids
- cellulose
- sugar
- xanthan and guar gum
- carbopol
- pigments
- clays
- pectin

In addition, IKA® high shear mixers have proved themselves in many other applications, including:

**Decomposing - organic tissue / plants**
- Chemical reactions / gassing - O₂/H₂
- Extracting - vortex extraction
- Shred / Macerate / Crush / Pulverize

**De-agglomeration / de-lumping**

**Precipitation - dehydration**

And more...
The details make the difference!
A high quality belt drive, along with a premium efficient, inverter-duty motor provides an efficient and flexible drive system. Scalability is assured by maintaining a constant shear rate on all machine sizes. A cartridge seal minimizes assembly and disassembly time, and offers optimum reliability. Standard seals are capable of pressures up to 290 psi (16 bar) and temperature to 400 °F (200°C), and other designs are available for more demanding applications. IKA® uses high quality materials for exceptional mechanical strength and corrosion resistance. By working closely with our customers and research institutions, the generators have been optimized for improved dispersing and efficiency. Generators are also available in many materials other than stainless steel for abrasive or corrosive applications. Some other key features are superior surface finishes, lack of dead spots, and designs that meet the stringent requirements of the FDA, EHEDG and 3A. IKA® mixers can be cleaned or steamed in place. The 2000 Series has so many benefits, there are too many to list!

A wide selection of generators (rotor/stators) are available to solve almost any application problem.
As diverse as the mixing industry may be, there are many similarities from one machine to the next. IKA® has developed a new modular series of machines that takes advantage of these similarities. A basic drive unit can be fitted with a multitude of different machine heads, providing a solution for almost any mixing application. Our engineers, in cooperation with our customers, combined their expertise to develop the most innovative machine program in the industry!

**Benefits of the 2000 series:**
- Self draining due to vertical orientation
- Dead spots are eliminated
- Surface finishes meet FDA, 3A and EHEDG
- CIP and SIP capable
- Extensive mixing tool options
- Low noise levels
- Designed to meet food and pharmaceutical industry standards
- Suitable for high pressure and temperature
- Cartridge seal can convert into Single or Double mechanical
- Directly Scaleable by maintaining constant tip speed
Modular construction - Provides better value and greater flexibility
IKA® offers the most versatile inline mixer for laboratory or pilot plant work. The innovative design can be converted to seven different types of mixing devices. A wide variety of mixing tool options add to the flexibility of this truly unique design. Additional accessories allow you to expand the capabilities even further. A controller allows for easy speed adjustment, to tailor the shear rate to the application requirements, and also has timer and temperature functions. Pumps, solid feeders, and other accessories can be added to create a continuous system. Vessels and stirrers are also available for a batch or recirculation type system.

**Technical Specifications: Labor Pilot**
- Inlet / Outlet Connection: 1”/0.75” Tri-Clamp
- Standard Motor: Stainless Steel, 2hp, 230/460 VAC, 3,600 rpm
- Nominal Output Speed: 7,900 rpm
- Min/Max Output Speed: 3,140 / 13,800 rpm
- Nominal Flow = 1.5 gpm (350 l/h)
- Max Pressure = 40 psi
- Optional 3 hp explosion proof, 5 hp XP
- Optional Generators: 2P, 2G, 6F, 8SF
- Standard Generator: 4M (medium)

* Other voltages available upon request

---

**MHD Module**
Powder / Liquid mixer has a unique, patented design that minimizes aeration and can disperse high concentrations of difficult to wet out solids, even in viscous liquids.

**CMS Module**
Powder / Liquid mixer creates a vacuum that draws in the solids and blends, all in one step.

Note: CMS Module requires a 4.5 hp motor. Outlet is 1”

**DR/DRS Module**
Three stage high shear mixer has four different mixing tool options that can be interchanged in any stage, offering maximum flexibility.

**MKO Module**
Cone mill utilizes a tungsten carbide mixing tool for wet milling extremely hard materials.

**UTL Module**
The basic machine consists of a single stage high shear mixer and offers four different interchangeable mixing tool options.

**MK Module**
Colloid mill has a three stage mixing tool for efficient wet milling.
The Process Pilot offers the same flexibility and features as the Labor Pilot, but has a double mechanical seal for processes requiring higher pressures, or containing highly abrasive solids.

**Technical Specifications: Process Pilot**
- Inlet / Outlet Connection: 1”/0.75” Tri-Clamp
- Motor: 3 hp, 230/460 VAC, 3,600 rpm, XP
- Nominal Output Speed: 7,900 rpm
- Min / Max Output Speed: 3,140 / 13,765 rpm
- Nominal Flow = 1.5 gpm (350 l/h)
- Max Pressure = 230 psi (7,900 rpm), 145 psi (13,800 rpm)
- Standard Generator: 4M (medium)
- Optional Generators: 2P, 2G, 6F, 8SF
- Optional Motor: 5 hp XP
* Other voltages available upon request

**Generators**
- 6F (Fine)
- 4M (medium)
- 2G (coarse)
- 2P (high-flow)

**Let IKA® design and build a “Turn-key” system for your laboratory or pilot plant!** Including electronic controls and everything needed for a complete package.

**Additional Accessories:**
- Recirculation Loop
- Pumps
- Solid Feeders
- Variable Frequency Drive for speed control
- Funnel

Vessel made of 316 stainless steel, with or without jacket for heating / cooling.

**Other generator styles and materials are available**
The UTL single stage dispersing machine is equipped with a high flow mixing tool that provides moderate shear for the general purpose of blending and homogenizing processes. The 2P generator can be used for materials that are shear sensitive, or particles that are too large to process in traditional high shear mixing tools.

### Generators: 2P

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal Flow Rate*</th>
<th>Output</th>
<th>Nominal Tip Speed</th>
<th>Power</th>
<th>Inlet / Outlet Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gpm/l/h</td>
<td>rpm/fpm</td>
<td>m/s</td>
<td>hp/kW</td>
<td>inches/mm</td>
</tr>
<tr>
<td>ULTRA-TURRAX®</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UTL 2000/4</td>
<td>5</td>
<td>1,100</td>
<td>7,900</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>UTL 2000/5</td>
<td>40</td>
<td>9,000</td>
<td>5,800</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>UTL 2000/10</td>
<td>120</td>
<td>27,000</td>
<td>4,200</td>
<td>10</td>
<td>7.5</td>
</tr>
<tr>
<td>UTL 2000/20</td>
<td>300</td>
<td>78,000</td>
<td>3,000</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>UTL 2000/30</td>
<td>500</td>
<td>115,000</td>
<td>3,000</td>
<td>50</td>
<td>37</td>
</tr>
<tr>
<td>UTL 2000/40</td>
<td>1000</td>
<td>225,000</td>
<td>1,500</td>
<td>75</td>
<td>55</td>
</tr>
<tr>
<td>UTL 2000/50</td>
<td>1500</td>
<td>340,000</td>
<td>1,100</td>
<td>150</td>
<td>110</td>
</tr>
</tbody>
</table>

* Flow rates can be +/-25% depending on fluid properties and auxiliary pumping. Consult IKA® for recommendation.
The UTL is a single stage dispersing machine used for the production of emulsions and suspensions requiring a coarse to medium particle size with a narrow distribution. A wide variety of rotor/stator combinations (generators) are available for adapting the machine to the application.

The UTL maintains a constant tip speed, regardless of machine size, ensuring scalability. A wide range of options is available on the motor, base, materials of construction, and more. The ULTRA-TURRAX® has high quality surface finishes for easy cleaning, and the machine is self-draining and CIP capable.

### Applications
- Sauces
- Fruit juices
- Marmalades
- Sugar solutions
- Dyes
- Binders
- Molten resins
- Lotions
- Adhesives
- Stabilizers

### Single Stage Inline Dispersers

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal Flow Rate*</th>
<th>Output</th>
<th>Nominal Tip Speed</th>
<th>Power</th>
<th>Inlet / Outlet Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gpm</td>
<td>l/h</td>
<td>rpm</td>
<td>m/s</td>
<td>hp</td>
</tr>
<tr>
<td>UTL 2000/4</td>
<td>1.5</td>
<td>300</td>
<td>7,900</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>UTL 2000/5</td>
<td>10</td>
<td>2,500</td>
<td>5,800</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>UTL 2000/10</td>
<td>35</td>
<td>8,000</td>
<td>4,200</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>UTL 2000/20</td>
<td>90</td>
<td>20,000</td>
<td>3,000</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>UTL 2000/30</td>
<td>175</td>
<td>40,000</td>
<td>1,500</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>UTL 2000/40</td>
<td>300</td>
<td>70,000</td>
<td>1,500</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>UTL 2000/50</td>
<td>550</td>
<td>125,000</td>
<td>1,100</td>
<td>4,500</td>
<td>23</td>
</tr>
</tbody>
</table>

* Flow rates can be +/-25% depending on fluid properties and auxiliary pumping. Consult IKA® for recommendation.
The DISPAX-REACTOR® is a high shear, three stage dispersing machine for the production of micro-emulsions and very fine suspensions. Three rotor-stator combinations (generators) in a series produce a small droplet or particle size, with a very narrow distribution. The generators can be easily interchanged, offering the ultimate in flexibility. The DR line offers the same advantages as the UTL for scalability and sanitary design, and is CIP and SIP capable.

Generators available: Coarse, Medium, Fine, Superfine, 2P.

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal Flow Rate*</th>
<th>Output</th>
<th>Nominal Tip Speed</th>
<th>Power</th>
<th>Inlet / Outlet Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gpm</td>
<td>l/h</td>
<td>rpm</td>
<td>fps</td>
<td>m/s</td>
</tr>
<tr>
<td>DR 2000/4</td>
<td>1.5</td>
<td>300</td>
<td>7,900</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>DR 2000/5</td>
<td>10</td>
<td>2,500</td>
<td>5,800</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>DR 2000/10</td>
<td>35</td>
<td>8,000</td>
<td>4,200</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>DR 2000/20</td>
<td>90</td>
<td>20,000</td>
<td>3,000</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>DR 2000/30</td>
<td>175</td>
<td>40,000</td>
<td>1,500</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>DR 2000/40</td>
<td>300</td>
<td>70,000</td>
<td>1,500</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>DR 2000/50</td>
<td>550</td>
<td>125,000</td>
<td>1,100</td>
<td>4,500</td>
<td>23</td>
</tr>
</tbody>
</table>

* Flow rates can be +/-25% depending on fluid properties and auxiliary pumping. Consult IKA® for recommendation.
SUPER DISPAX-REACTOR® Inline

It is well known that tip speed, and therefore shear rate, is one of the most important factors in achieving the finest micro-emulsions. The SUPER DISPAX REACTOR® combines extremely high shear rates with a fine generator geometry to produce the ultimate in high energy dispersing. Due to the high tip speeds, two stages are often all that is needed to achieve the results that are desired. The DRS is designed with the same high quality features as the UTL and the DR, and is especially suited for even the toughest pharmaceutical applications. Tip speeds exceeding 10,000 fpm can be achieved. The DRS can be an alternative to costly high pressure homogenizers.

Generators available: Coarse, Medium, Fine Superfine.

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal Flow Rate*</th>
<th>Output</th>
<th>Nominal Tip Speed</th>
<th>Power</th>
<th>Inlet / Outlet Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gpm</td>
<td>l/h</td>
<td>rpm</td>
<td>fpm</td>
<td>m/s</td>
</tr>
<tr>
<td>DRS 2000/5</td>
<td>3</td>
<td>700</td>
<td>10,500</td>
<td>7,900</td>
<td>40</td>
</tr>
<tr>
<td>DRS 2000/10</td>
<td>10</td>
<td>2,500</td>
<td>7,300</td>
<td>7,900</td>
<td>40</td>
</tr>
<tr>
<td>DRS 2000/20</td>
<td>30</td>
<td>7,000</td>
<td>4,900</td>
<td>7,900</td>
<td>40</td>
</tr>
<tr>
<td>DRS 2000/30</td>
<td>90</td>
<td>20,000</td>
<td>2,850</td>
<td>7,900</td>
<td>40</td>
</tr>
<tr>
<td>DRS 2000/50</td>
<td>175</td>
<td>40,000</td>
<td>2,000</td>
<td>7,900</td>
<td>40</td>
</tr>
</tbody>
</table>

* Flow rates can be +/-25% depending on fluid properties and auxiliary pumping. Consult IKA® for recommendation.
The colloid mill MK 2000 is especially designed for the production of colloidal solutions, or extremely fine emulsions and suspensions. The high tip speeds, combined with an extremely small shear gap, produces intense friction on the material being processed. The friction and shear that result is commonly referred to as wet milling. The rotor and stator are cone shaped, and have three stages of increasingly fine serrations, or grooves. The stator can be infinitely adjusted to obtain the desired gap setting between the rotor and stator. The grooves change directions in each stage for increased turbulence. With high quality finishes and materials, the MK tool offers an extremely efficient milling geometry.

<table>
<thead>
<tr>
<th>Type</th>
<th>Max. Flow Rate*</th>
<th>Output rpm</th>
<th>Nominal Tip Speed fpm</th>
<th>Power hp</th>
<th>Inlet / Outlet Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLLOID MILL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK 2000/4</td>
<td>1.5</td>
<td>300</td>
<td>7,900</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>MK 2000/5</td>
<td>10</td>
<td>2,500</td>
<td>5,800</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>MK 2000/10</td>
<td>35</td>
<td>7,500</td>
<td>4,200</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>MK 2000/20</td>
<td>90</td>
<td>20,000</td>
<td>2,850</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>MK 2000/30</td>
<td>175</td>
<td>40,000</td>
<td>1,420</td>
<td>4,500</td>
<td>23</td>
</tr>
<tr>
<td>MK 2000/50</td>
<td>350</td>
<td>80,000</td>
<td>1,100</td>
<td>4,500</td>
<td>23</td>
</tr>
</tbody>
</table>

* Flow rates are dependent of the gap setting and the material being processed. Flow rates can be reduced to as low as 10% of the maximum rating for difficult to process materials and near zero gap settings.
Another unique IKA® innovation, the cone mill MKO 2000 was designed to extend beyond the capabilities of the colloid mill. Given its innovative design, it is capable of wet milling and grinding, producing even smaller particle sizes than a colloid mill. The milling gap is infinitely adjustable so that exact amount of milling action can be obtained.

The surface of the milling tool is coated with an extremely hard coating that has a very rough surface texture. The coatings consist of high quality materials such as carbides and ceramics, and have different grain sizes. The milling tool produces an extremely intense shear zone that can process materials with high or low viscosities, but even finer distribution and particle sizes than a colloid mill.

<table>
<thead>
<tr>
<th>Type</th>
<th>Max Flow Rate*</th>
<th>Output rpm</th>
<th>Nominal Tip Speed fpm</th>
<th>Power hp</th>
<th>Inlet / Outlet Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONE MILL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKO 2000/4</td>
<td>0.04</td>
<td>10</td>
<td>7,900</td>
<td>4,500</td>
<td>23 2 1.5 1/0.75 25/15</td>
</tr>
<tr>
<td>MKO 2000/5</td>
<td>0.5</td>
<td>150</td>
<td>5,800</td>
<td>4,500</td>
<td>23 2.5 5.5 2/1.5 40/32</td>
</tr>
<tr>
<td>MKO 2000/10</td>
<td>2</td>
<td>500</td>
<td>4,200</td>
<td>4,500</td>
<td>23 3 7.5 11 15/11 27/17</td>
</tr>
<tr>
<td>MKO 2000/20</td>
<td>7</td>
<td>1,500</td>
<td>2,850</td>
<td>4,500</td>
<td>23 4 10 15 3/2.5 50/50</td>
</tr>
<tr>
<td>MKO 2000/30</td>
<td>15</td>
<td>3,000</td>
<td>1,420</td>
<td>4,500</td>
<td>23 5 7.5 11 50/50 150/125</td>
</tr>
<tr>
<td>MKO 2000/50</td>
<td>25</td>
<td>6,000</td>
<td>1,100</td>
<td>4,500</td>
<td>23 6 10 11 8/6 200/150</td>
</tr>
</tbody>
</table>

* Flow rates are dependent of the gap setting and the material being processed. Flow rates can be reduced to as low as 10% of the maximum rating for difficult to process materials and near zero gap settings.
Continuous production requires continuous feeding. IKA® can provide a complete turn-key system, including bulk bag unloaders and other powder or liquid processing equipment. IKA® engineers can design a complete system and controls according to your application requirements. Machines and systems can be provided from laboratory to production scale.

The core of a continuous liquid-solid-mixing plant is the MHD (Mixing-Homogenizing-Dispersing). This patented machine can process solids concentrations up to 90%. In addition, this unique design eliminates the aeration that is inherent in other suction type powder/liquid mixers. The MHD can also process fluids with extremely high viscosities, well beyond other powder/liquid mixers.
When production quantities require a continuous process, the MHD 2000 can get the job done. Solids and liquids are instantaneously mixed and dispersed in one step, maintaining a dust free environment. The MHD accurately combines the solid and liquid, and disperses them into a homogeneous, final product. Tanks and other auxiliary equipment can often be eliminated, saving capital and operating expenses. The MHD has a unique, patented design that doesn’t require suction to draw in the powders, which essentially eliminates aeration. The MHD offers the greatest flexibility in production, and offers maximum product consistency. The MHD can also run in recirculation mode as an enrichment process. The MHD avoids bridging and aeration. Scalability is ensured by maintaining a constant tip speed of 23 m/s throughout the product range.

<table>
<thead>
<tr>
<th>Type</th>
<th>Max Flow Rate*</th>
<th>Max. Powder Feed Rates*</th>
<th>Base Power</th>
<th>Solids / Liquids / Outlet Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gpm</td>
<td>lb/hr</td>
<td>kg/hr</td>
<td>hp/kW</td>
</tr>
<tr>
<td>MHD 2000/4</td>
<td>0.5</td>
<td>100</td>
<td>110</td>
<td>50</td>
</tr>
<tr>
<td>MHD 2000/5</td>
<td>3</td>
<td>700</td>
<td>1,100</td>
<td>500</td>
</tr>
<tr>
<td>MHD 2000/10</td>
<td>10</td>
<td>2,500</td>
<td>2,900</td>
<td>1,300</td>
</tr>
<tr>
<td>MHD 2000/20</td>
<td>30</td>
<td>7,000</td>
<td>6,000</td>
<td>2,800</td>
</tr>
<tr>
<td>MHD 2000/30</td>
<td>90</td>
<td>20,000</td>
<td>14,000</td>
<td>6,200</td>
</tr>
<tr>
<td>MHD 2000/50</td>
<td>175</td>
<td>40,000</td>
<td>25,000</td>
<td>11,200</td>
</tr>
</tbody>
</table>

* Higher feed rates can be achieved with the addition of pumps and a powder feeding device.
The IKA® CMS 2000 provides an extremely high suction capacity that is ideal for wetting out difficult to mix powders. The high shear rotor and stator provide a homogeneous, agglomerate free product. The high capacities of the CMS can greatly reduce process times. The CMS can be installed in a once-through arrangement, or in a batch (re-circulating) arrangement.

The CMS can be fed by loading the powders into a hopper that is mounted on the inlet of the machine. Powders can be manually loaded, or for semi- or fully automatic operation, a conveyor, pneumatic loader, or other transfer system can load the solids.

Powders can be suctioned out of a bag or bin with a suction wand. The CMS minimizes handling of the powders, avoiding contamination. The CMS also reduces man-power requirements by making it easy to feed in the solids.
Incorporating powders into liquids, without lumps and without dust, is an important part of many processes. The CMS 2000 utilizes a specially designed rotor that creates enormous suction to draw in solids, while it pumps the liquid at the same time. The liquid can then be re-circulated until all powders are incorporated. Even difficult to wet out solids can be incorporated at high flow rates. In some cases, solids concentrations of up to 80% can be achieved. Additional dispersing can be accomplished by continually re-circulating without adding more powder.

<table>
<thead>
<tr>
<th>Type</th>
<th>Max Flow Rate*</th>
<th>Max. Powder Feed Rates*</th>
<th>Power</th>
<th>Solids / Liquids / Outlet Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gpm</td>
<td>I/h</td>
<td>lb/hr</td>
<td>kg/hr</td>
</tr>
<tr>
<td>CMS 2000/4</td>
<td>25</td>
<td>7,000</td>
<td>1,100</td>
<td>500</td>
</tr>
<tr>
<td>CMS 2000/5</td>
<td>65</td>
<td>15,000</td>
<td>3,500</td>
<td>2,500</td>
</tr>
<tr>
<td>CMS 2000/10</td>
<td>130</td>
<td>35,000</td>
<td>12,000</td>
<td>5,500</td>
</tr>
<tr>
<td>CMS 2000/20</td>
<td>265</td>
<td>65,000</td>
<td>19,000</td>
<td>8,500</td>
</tr>
<tr>
<td>CMS 2000/30</td>
<td>440</td>
<td>100,000</td>
<td>30,000</td>
<td>14,000</td>
</tr>
<tr>
<td>CMS 2000/50</td>
<td>880</td>
<td>200,000</td>
<td>62,000</td>
<td>28,000</td>
</tr>
</tbody>
</table>

* Flow rates can be +/- 25% depending on fluid properties and auxiliary pumping. Consult IKA® for recommendation.
For several decades, the ULTRA-TURRAX® name has been synonymous with quality and reliability. The machines are used in every industry for the production of emulsions, suspensions and lysols. A wide variety of rotor - stator combinations (generators) are available for adapting the machine to meet the needs of nearly any application. Additional options are also available for atmospheric or pressurized processes. Standard machines are capable of handling pressures to 230 psig (16 bar), and temperatures of 310 °F (160 °C). The machines can be adapted to handle even higher pressures and temperatures upon request. Whether it’s the UTC for top mounting, or the UTE for bottom or side mounting, all of the generators are designed to provide consistent results.

Sealing type KD
(mechanical seal)

Sealing type KT
(lip seal)
IKA® is the world leader in the design and manufacturing of high shear mixers and systems. IKA® produces a full range of mixers, from laboratory to production scale. Our high shear mixers and dispersers feature our proven rotor-stator designs that are used in thousands of chemical, food, pharmaceutical and cosmetic companies. The machines are designed to withstand the most demanding applications, and provide the ultimate flexibility for your application needs.

IKA® Laboratory Reactors are designed and configured for simulating and optimizing chemical reaction processes as well as mixing, dispersing and homogenizing processes on a small scale. Lab Reactors can be customized to fit the applications.

ULTRA TURRAX® T 50 basic High-performance dispersing instrument.
• Volume range: 0.25 - 30 liters
• Wide selection of interchangeable dispersing tools
• 700 Watts and integrated controls ensure constant speed, even with changes in viscosity

ULTRA TURRAX® T 25 basic High-performance dispersing instrument. Applications range from homogenizing waste water samples, dispersing in laboratory reactors, or dispersing tasks under vacuum / pressure and sample preparation in medical diagnostics.
## High Shear Batch Mixers - top entry

### ULTRA TURRAX®

<table>
<thead>
<tr>
<th>Type</th>
<th>Size gpm</th>
<th>Nominal gallon</th>
<th>Nominal liters</th>
<th>Motor Power hp@60Hz</th>
<th>kW@50Hz</th>
<th>Nominal Speed rpm @60Hz</th>
<th>Tip Speed m/s@60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTC</td>
<td>80</td>
<td>40</td>
<td>150</td>
<td>5</td>
<td>1.5</td>
<td>3600</td>
<td>12</td>
</tr>
<tr>
<td>UTC</td>
<td>115</td>
<td>130</td>
<td>500</td>
<td>7.5</td>
<td>3</td>
<td>3600</td>
<td>18</td>
</tr>
<tr>
<td>UTC</td>
<td>150</td>
<td>450</td>
<td>1,700</td>
<td>15</td>
<td>5.5</td>
<td>3600</td>
<td>25</td>
</tr>
<tr>
<td>UTC</td>
<td>220</td>
<td>660</td>
<td>2,500</td>
<td>25</td>
<td>7.5</td>
<td>1800</td>
<td>18</td>
</tr>
<tr>
<td>UTC</td>
<td>280</td>
<td>900</td>
<td>3,500</td>
<td>30</td>
<td>18.5</td>
<td>1800</td>
<td>24</td>
</tr>
<tr>
<td>UTC</td>
<td>300</td>
<td>1,000</td>
<td>4,000</td>
<td>50</td>
<td>30</td>
<td>1800</td>
<td>25</td>
</tr>
<tr>
<td>UTC</td>
<td>330</td>
<td>1,300</td>
<td>5,000</td>
<td>60</td>
<td>22</td>
<td>1200</td>
<td>18</td>
</tr>
<tr>
<td>UTC</td>
<td>350</td>
<td>1,500</td>
<td>6,000</td>
<td>75</td>
<td>22</td>
<td>1200</td>
<td>20</td>
</tr>
<tr>
<td>UTS - Ph</td>
<td>115</td>
<td>130</td>
<td>500</td>
<td>7.5</td>
<td>3</td>
<td>3600</td>
<td>18</td>
</tr>
<tr>
<td>UTS - Ph</td>
<td>150</td>
<td>450</td>
<td>1,700</td>
<td>15</td>
<td>5.5</td>
<td>3600</td>
<td>25</td>
</tr>
</tbody>
</table>

*Tip Speeds to 25 m/sec can be achieved with optional VFD Speed Controller on all UTC and UTE models.*

### Applications
- Creams
- Waxes
- Polishing agents
- Gelling agents
- Dyes
- Polymer emulsions
- and more...

---

**UTC/KD**

**UTS/KT** or KD

**UTC/KT**
ULTRA TURRAX®

Applications

- Creams
- Waxes
- Polishing agents
- Gelling agents
- Dyes
- Polymer emulsions
- Shampoos, Conditioners
- In-tank reactions
- and more...

<table>
<thead>
<tr>
<th>Type</th>
<th>Size (gpm)</th>
<th>Nominal Capacity (gallon/liters)</th>
<th>Motor Power hp@60Hz</th>
<th>Motor Power kW@50Hz</th>
<th>Nominal Speed rpm @60Hz</th>
<th>Tip Speed m/s@60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTE</td>
<td>60</td>
<td>18</td>
<td>3</td>
<td>1.85</td>
<td>3600</td>
<td>27</td>
</tr>
<tr>
<td>UTE</td>
<td>115</td>
<td>100</td>
<td>7.5</td>
<td>3</td>
<td>3600</td>
<td>18</td>
</tr>
<tr>
<td>UTE</td>
<td>150</td>
<td>200</td>
<td>15</td>
<td>5.5</td>
<td>3600</td>
<td>25</td>
</tr>
<tr>
<td>UTE</td>
<td>220</td>
<td>300</td>
<td>25</td>
<td>11</td>
<td>1800</td>
<td>18</td>
</tr>
<tr>
<td>UTE</td>
<td>250</td>
<td>400</td>
<td>40</td>
<td>15</td>
<td>1800</td>
<td>21</td>
</tr>
<tr>
<td>UTE</td>
<td>280</td>
<td>600</td>
<td>50</td>
<td>22</td>
<td>1800</td>
<td>24</td>
</tr>
<tr>
<td>UTE</td>
<td>300</td>
<td>1,000</td>
<td>60</td>
<td>30</td>
<td>1800</td>
<td>25</td>
</tr>
</tbody>
</table>

*Processing volume can be substantially increased with supplemental agitation. Consult IKA® for recommendation.

The ULTRA-TURRAX® UTE is for bottom or side mounting to vessels. The UTE is used primarily when trying to avoid aeration and vortices, or when the vessel arrangement cannot utilize a top-entering mixer. Standard machines are suitable for vacuum or pressure application up to 230 psig (16 bar), and temperatures from -40 °F to 320 °F (-40 to 160 °C). The machines can be adapted to handle even higher pressures and temperatures upon request.
ROTOTRON®

The IKA®-ROTOTRON® is a jet-flow agitator with dispersing performance greater than a traditional propeller mixer, but less than a rotor-stator mixer. The ROTOTRON® will intensely circulate the product while it mixes, even at high viscosities (15,000 cPs). The rotation direction can be reversed for processing liquids with high viscosities. The special geometry of the rotor and jet-tube concentrate the flow into a high velocity stream, but energy consumption is very low. Because of the high flow characteristics, the machine can be mounted in almost any position. Standard machines are capable of handling pressures to 230 psig (16 bar), and temperatures of 310 °F (160 °C). The machines can be adapted to handle even higher pressures and temperatures upon request.

Applications

- Polishes
- Enamels
- Fragrances
- Gels
- Flocculants
- Latex
- Waste water aeration
- Bio-reactors
- and more...

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal Capacity* gallons</th>
<th>liters</th>
<th>Motor Power hp@60Hz</th>
<th>hp@50Hz</th>
<th>Nominal Speed rpm@60Hz</th>
<th>Max Length in. (mm)</th>
<th>Flow Capacity gpm@60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT 115</td>
<td>250</td>
<td>1,000</td>
<td>3</td>
<td>1.5</td>
<td>3,600</td>
<td>59 (1,500)</td>
<td>110</td>
</tr>
<tr>
<td>RT 150</td>
<td>1,250</td>
<td>5,000</td>
<td>7.5</td>
<td>3</td>
<td>3,600</td>
<td>67 (1,700)</td>
<td>260</td>
</tr>
<tr>
<td>RT 220</td>
<td>2,500</td>
<td>10,000</td>
<td>10</td>
<td>5.5</td>
<td>1,800</td>
<td>90 (2,300)</td>
<td>470</td>
</tr>
<tr>
<td>RT 250</td>
<td>4,000</td>
<td>15,000</td>
<td>15</td>
<td>7.5</td>
<td>1,800</td>
<td>90 (2,300)</td>
<td>650</td>
</tr>
<tr>
<td>RT 280</td>
<td>5,000</td>
<td>20,000</td>
<td>25</td>
<td>11</td>
<td>1,800</td>
<td>98 (2,500)</td>
<td>900</td>
</tr>
<tr>
<td>RT 350</td>
<td>8,000</td>
<td>30,000</td>
<td>40</td>
<td>15</td>
<td>1,200</td>
<td>106 (2,700)</td>
<td>1,000</td>
</tr>
</tbody>
</table>

* Processing volume can be substantially increased with supplemental agitation. Consult IKA® for recommendation.
The name IKA®-TURBOTRON represents the classic stirrer. The machine can be fitted with a wide variety of mixing tools, as shown to the right. Motor, drive and seal options are available to fit the machine to the application.

The TURBOTRON® can operate under vacuum or pressure, and a wide temperature range. Special materials and finishes are available for pharmaceutical and other specialized applications. Lengths can be specified according to the vessel size, see the diagrams on the next page for additional information.

Nomenclature:
RK-00-P-800
installation length
stirring tool
machine size

<table>
<thead>
<tr>
<th>Type</th>
<th>Rec. Volume (H₂O)</th>
<th>Motor Power hp@60Hz</th>
<th>kW@50Hz</th>
<th>Nominal Speed rpm@60Hz</th>
<th>Max. Length mm</th>
<th>Stirring Tool Diameter - mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>TURBOTRON®</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RK / RF 00</td>
<td>125 / 250</td>
<td>0.75 / 1</td>
<td>0.37 / 0.55</td>
<td>1,200 / 1,300</td>
<td>1,500</td>
<td>P 125 100 90 90</td>
</tr>
<tr>
<td>RK / RF 01</td>
<td>250 / 500</td>
<td>1 / 1.5</td>
<td>0.55 / 0.75</td>
<td>1,000 / 1,200</td>
<td>1,500</td>
<td>T 125 100 100 100</td>
</tr>
<tr>
<td>RK / RF 02</td>
<td>400 / 800</td>
<td>1,500 / 3,000</td>
<td>0.75 / 1.5</td>
<td>1,200 / 900</td>
<td>1,750</td>
<td>S 190 150 125 125</td>
</tr>
<tr>
<td>RK / RF 03</td>
<td>500 / 1,000</td>
<td>2,000 / 4,000</td>
<td>1.1 / 2.2</td>
<td>1,200 / 1,200</td>
<td>1,500</td>
<td>Z 190 150 150 150</td>
</tr>
<tr>
<td>RK / RF 04</td>
<td>650 / 1,300</td>
<td>2,500 / 5,000</td>
<td>1.1 / 2.2</td>
<td>900 / 1,200</td>
<td>1,750</td>
<td></td>
</tr>
<tr>
<td>RK / RF 05</td>
<td>800 / 1,500</td>
<td>3,000 / 6,000</td>
<td>2.2 / 4</td>
<td>900 / 900</td>
<td>1,750</td>
<td></td>
</tr>
<tr>
<td>RK / RF 06</td>
<td>900 / 2,100</td>
<td>3,500 / 8,000</td>
<td>3.7 / 5.5</td>
<td>1,200 / 900</td>
<td>1,750</td>
<td></td>
</tr>
<tr>
<td>RK / RF 07</td>
<td>1,000 / 3,000</td>
<td>4,000 / 12,000</td>
<td>7.5 / 7.4</td>
<td>1,200 / 900</td>
<td>1,750</td>
<td></td>
</tr>
</tbody>
</table>
**Batch Mixers**

**TURBOTRON®**

- **Anchor Stirrer**
  - \(0.75 \leq \frac{D}{H} \leq 1\)
  - \(0.9 \leq \frac{d}{D} \leq 0.98\)
  - \(0.75 \leq \frac{h}{d} \leq 1\)
  - \(b = 0.1 \cdot d\)

- **Propeller Stirrer**
  - \(0.5 \leq \frac{D}{H} \leq 0.75\)
  - \(0.1 \leq \frac{d}{D} \leq 0.5\)
  - \(\frac{D}{3} \leq \frac{a}{D} \leq \frac{D}{2}\)
  - \(B = 0.1 \cdot D\)

- **Disk Stirrer**
  - \(0.5 \leq \frac{D}{H} \leq 0.75\)
  - \(0.2 \leq \frac{d}{D} \leq 0.5\)
  - \(\frac{D}{3} \leq \frac{a}{D} \leq \frac{D}{2}\)
  - \(\alpha = 10°\)

- **Turbine Stirrer**
  - \(0.5 \leq \frac{D}{H} \leq 0.75\)
  - \(0.1 \leq \frac{d}{D} \leq 0.3\)
  - \(\frac{D}{3} \leq \frac{a}{D} \leq \frac{D}{2}\)

- **Toothed Disk Stirrer**
  - \(0.2 \leq \frac{d}{D} \leq 0.5\)
  - \(\frac{D}{3} \leq \frac{a}{D} \leq \frac{D}{2}\)
  - \(0.75 \leq \frac{D}{H} \leq 1\)

<table>
<thead>
<tr>
<th>Type</th>
<th>Rec. Volume (H₂O)</th>
<th>Motor Power</th>
<th>Nominal Speed</th>
<th>Max. Length</th>
<th>Mixing Tool Diameter</th>
<th>P</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gallon / liters</td>
<td>hp@60Hz / kW@50Hz</td>
<td>rpm@60Hz</td>
<td>mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TURBOTRON®</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RKG / RFG 00</td>
<td>250 / 2,500</td>
<td>1,000 / 1,000</td>
<td>1 / 1</td>
<td>0.55 / 0.55</td>
<td>250 / 250</td>
<td>1,250 / 1,500</td>
<td>250</td>
</tr>
<tr>
<td>RKG / RFG 01</td>
<td>400 / 4,000</td>
<td>1,500 / 1,500</td>
<td>1.5 / 1.5</td>
<td>0.75 / 0.75</td>
<td>250 / 250</td>
<td>1,250 / 1,500</td>
<td>300</td>
</tr>
<tr>
<td>RKG / RFG 02</td>
<td>800 / 8,000</td>
<td>3,000 / 3,000</td>
<td>3 / 3</td>
<td>1.5 / 1.5</td>
<td>250 / 250</td>
<td>1,500 / 1,500</td>
<td>350</td>
</tr>
<tr>
<td>RKG / RFG 03</td>
<td>1,000 / 1,500</td>
<td>4,000 / 6,000</td>
<td>5 / 7.5</td>
<td>2.2 / 3</td>
<td>300 / 250</td>
<td>1,500 / 1,750</td>
<td>400</td>
</tr>
<tr>
<td>RKG / RFG 04</td>
<td>1,300 / 2,100</td>
<td>5,000 / 8,000</td>
<td>7.5 / 7.5</td>
<td>3 / 4</td>
<td>250 / 250</td>
<td>1,750 / 2,000</td>
<td>450</td>
</tr>
<tr>
<td>RKG / RFG 05</td>
<td>1,600 / 3,000</td>
<td>6,000 / 12,000</td>
<td>7.5 / 10</td>
<td>4 / 5.5</td>
<td>250 / 250</td>
<td>2,000 / 2,500</td>
<td>500</td>
</tr>
<tr>
<td>RKG / RFG 06</td>
<td>2,100 / 4,000</td>
<td>8,000 / 15,000</td>
<td>10 / 15</td>
<td>5.5 / 7.5</td>
<td>250 / 250</td>
<td>2,000 / 2,750</td>
<td>550</td>
</tr>
<tr>
<td>RKG / RFG 07</td>
<td>3,000 / 5,000</td>
<td>12,000 / 20,000</td>
<td>15 / 20</td>
<td>7.4 / 9.2</td>
<td>250 / 250</td>
<td>2,000 / 3,000</td>
<td>600</td>
</tr>
</tbody>
</table>
A complete line of stands are available for all IKA® stirrers and ULTRA-TURRAX® batch machines. Lifting and lowering can be done with either a manual hydraulic pump, or an electro-hydraulic pump for automatic operation. The stands may also be equipped with a swivel bracket for angle adjustment of the mixer.

An optional vessel clamp is also available. Other options are available, including materials of construction and electrical controls. The lifting height of the stand can be specified according to the requirements. Stainless steel versions with high quality surface finishes are available for the food and pharmaceutical industries.

### SFH 150 Stainless
mobile stand in stainless steel execution with hydraulic hand pump, control panel and vessel fixation device

<table>
<thead>
<tr>
<th>Type of stand</th>
<th>Drive Type / Capacity</th>
<th>Max load</th>
<th>Max. lift height</th>
<th>Lift drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Stands</td>
<td>SFH 150 / SFH 250</td>
<td>350 / 500</td>
<td>1,000 / 1,000</td>
<td>manual</td>
</tr>
<tr>
<td></td>
<td>SFAE 150 / SFAE 250</td>
<td>350 / 500</td>
<td>1,000 / 1,000</td>
<td>auto</td>
</tr>
<tr>
<td>Floor Stands</td>
<td>SBH 150 / SBH 250</td>
<td>350 / 500</td>
<td>1,200 / 1,200</td>
<td>manual</td>
</tr>
<tr>
<td></td>
<td>SBAE 150 / SBAE 250</td>
<td>350 / 500</td>
<td>1,200 / 1,200</td>
<td>auto</td>
</tr>
<tr>
<td>Wall Stands</td>
<td>SWH 150 / SWH 250</td>
<td>350 / 500</td>
<td>1,600 / 1,600</td>
<td>manual</td>
</tr>
<tr>
<td></td>
<td>SWAE 150 / SWAE 250</td>
<td>350 / 500</td>
<td>1,600 / 1,600</td>
<td>auto</td>
</tr>
</tbody>
</table>
The Master Plant provides “All-in-one Mixing” to eliminate costly equipment, reduce maintenance and improve product quality.

The lid is raised and lowered with a powered lift that is enclosed. Safety switches lock out the mixer when being lifted. The lid can also swing away for easy cleaning and maintenance.

Plant is completely encased in stainless steel.

Viewing port for the seal cooling system.

Motor is completely encased.

The patented DBI 2000 is multi-functional; it mixes, incorporates solids into liquids, disperses and pumps product, or cleaning solution.

The Master Plant is a complete processing system including vessel, piping, valves, controls and two mixers. It is designed to emulsify, homogenize or blend virtually any material. The Master Plant’s design eliminates the need for additional equipment such as circulating pumps and transfer pumps. Two components in the system- an integral counter-rotating agitator and a high shear mixing unit combine to provide complete mixing, homogenization or dispersion, plus product and system cleaning.

Applications

Food:
Sauces
Dressings
Mayonnaise
Liquid spices
Cheese spread
Ready-to-serve-meals
Baby food
Jams
Pet food
Starch solutions
Alginate

Beverage:
Fruit juices
Vegetable juices
Milkshakes
Protein drinks
Liquors
Sugar solutions
Flavors

Cosmetics:
Creams
Sun protection products
Perfumes
Shaving cream
Decorative cosmetics
Shampoo
Body-care products
Conditioners
Hand soaps
Liquid soaps
Tooth paste
Collagen suspensions
Carbopol emulsions
Turn-key Systems and Plants

Master Plant MP 2000

The Master Plant is loaded with features ...

Applications

Pharmaceutical industry:
- Ointments
- Gels
- Eye drops
- Eye ointment
- Cough syrups
- Infusion solutions
- Sugar-salt solutions
- Suppository masses
- Coatings
- Lotions (W/O or O/W)
- Paraffin emulsions
- Lipid emulsions
- Disintegration of vegetable substances
- Antiseptics
- Serum
- Vaccines

Chemical industry:
- Cleaning agents
- Polishing agents
- Lubricants
- Colors
- Anti-corrosion products
- Wax emulsions
- Ceramic suspensions
- Polymer emulsions
- Silicone emulsions
- TiO₂-suspensions
- Colloidal suspensions
- Catalyst suspensions
- Impregnating agents
- Pesticides
- Fungicides

Connections for vacuum, compressed air or funnels for additives

Electronic controls include a large touch screen in color

Load cells

Integrated control cabinet

Feed solids directly into the high shear mixer... no floating solids or fish eyes

Counter-rotating agitator moves product up or down, depending on rotation direction selected. Pivoting scrapers keep product off the vessel walls. The counter-rotating agitator can also heat or cool!

DBI 2000 is removable from the front for easy maintenance

MP 500  MP 1000  MP 2000  MP 4000
CIP-cleaning:
At least three spray nozzles provide thorough cleaning without dead spots or hidden areas.

The spiral agitator provides heating or cooling capabilities which can shorten the heat transfer time by up to 40%. This offers significant process advantages, especially when cooling and stabilizing emulsions.

The lid lock is available in two versions, depending on the process pressure: either a clamp ring or screw connection designed especially for sanitary requirements.
Turn-key Systems and Plants

Master Plant MP 2000

The Heart of the Master Plant .... DBI 2000

A Patented new mixer design that incorporates mixing, solid incorporation, dispersing, and pumping functions, all into one machine!

Principle of Operation:

The pumping rotor creates suction within the system for circulation and for mixing at low shear stresses. At high speeds it builds pressure up to 60 psi (4 bar) and flow rates sufficient for CIP cleaning.

A throttle valve between inlet and dispersing chamber creates the fluid velocity needed to suck in additives, thus eliminating the need for pulling a vacuum in the mixing vessel.

Product can be recirculated to either the upper, or lower return nozzle, depending on the batch size.

Products can be diverted to an outlet for downstream processing or packaging.

Agitator blades mix product in the conical part of the vessel when processing small quantities. The blades can rotate opposite the spiral anchor during melting or other operations that require counter-rotating anchor stirrers.

Piston valve in an execution free of dead zones guarantees for avoiding of remaining quantities. Best cleaning possible.

Feed solid or liquid additives directly into the dispersing chamber. This results in a quick and complete wetting out of product and avoids the forming of lumps.

The dispersing chamber includes a high shear mixing tool for superior mixing performance.
Dilution Plants

In order to reduce transportation costs and provide greater flexibility in processes, IKA® provides a complete line of Dilution Plants. Multiple streams can be combined and dispersed in a single pass, and varying dilution levels can be easily accomplished with automatic and precise control. Systems can be customized to the requirements of the application.

Applications

- Liquid detergents for household industry and body care
- Multiple emulsions
- Catalysts
- Enzymatic treatment
- Mixing
- Dissolving
- Emulsifying
- Homogenizing

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal Capacity</th>
<th>Flow Rate Concentrate*</th>
<th>Flow Rate Diluting Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>gpm</td>
<td>l/h</td>
<td>gpm</td>
</tr>
<tr>
<td>DPV 3000</td>
<td>10</td>
<td>3,000</td>
<td>2.2 - 5.3</td>
</tr>
<tr>
<td>DPV 5000</td>
<td>20</td>
<td>5,000</td>
<td>3.5 - 8.8</td>
</tr>
<tr>
<td>DPV 7500</td>
<td>30</td>
<td>7,500</td>
<td>4.4 - 11</td>
</tr>
<tr>
<td>DPV 10000</td>
<td>40</td>
<td>10,000</td>
<td>7 - 17.6</td>
</tr>
<tr>
<td>DPV 15000</td>
<td>60</td>
<td>15,000</td>
<td>11 - 26.4</td>
</tr>
</tbody>
</table>

* Larger sizes and mixing proportions are available.
Complete mixing and dispersing systems are engineered and built according to the application and operation requirements. Systems are available for combining multiple liquid streams, solids addition or injection of gases into liquids. The core of every continuous system is a high performance IKA® high shear mixer.

Continuous system for dispersing multiple liquid streams. Includes pumps, flow meters and associated equipment.

Continuous system for dispersing solids into a liquid stream, with a complete electronic control package, and mounted on a mobile base.
Turn-key plants are designed and built according to the application and operation requirements. Vessels, mixers and other equipment can be combined to provide a ready to install plant, including electric controls. Plants can be designed for chemical, food or pharmaceutical applications.

**Custom Integrated Solutions**

- Continuous Mixing System for multiple liquids
- Batch or semicontinuous systems
- Continuous systems for solid-liquid incorporation and multiple liquid streams

Automatic controls can be specified according to your production needs.
Spare parts and service

IKA® has a large amount of inventory for quick delivery of spare parts. A modern stock room is equipped with the latest technology in inventory control. The service department can service IKA® equipment in our facility, or at the customer’s site.

Trial equipment and test facility

A large number of IKA® machines are available for trials. Testing can be done in our testing laboratory, or at the customer’s facility. The IKA® test facility is equipped with a particle size analyzer, pumps, and a wide range of instrumentation and auxiliary equipment. The pilot plant is also used for optimization of existing equipment, and for the development of new machines and processes.

Quality assurance

Every single IKA® product is submitted to a final product quality test before it leaves our facility. An operational test and complete inspection ensures that every machine will be easily integrated at the customer’s plant.
Compared to the classical planetary mixer, with only one drive motor, the IKA®-PLANETRON® vertical kneading machine offers 2 drive motors, which permits additional speed adjustment between the two kneading blades. This allows even sticky materials like hotmelts to be processed in a vertical kneading machine. In standard planetary mixers, these materials climb up at the kneading blades, and were not effected by the shear forces.

A very large viscosity range makes IKA® kneaders unique from low-viscosity glues (hotmelts) up to extremely high-viscosity rubber mixtures, any can be processed with IKA® horizontal kneading machines fitted with DUPLEX or ZETA blades. The use of these patented kneading blades results in a substantially improved product homogeneity, and a savings of up to 30% of kneading time compared to the classical Z-Kneaders.

Vacuum-tight, and double jacketed kneading bowls, high-quality stainless steel on all wetted parts, and high-quality shaft seals, with easy access for service and maintenance are all standard IKA® features.
Developed over a decade ago by IKA®, the CONTERNA, a continuous kneading and extrusion machine, has proven to be the kneader of choice in numerous production processes. The CONTERNA significantly reduces operating costs by reducing manpower and production costs with continuous, in-line kneading. There are several industries where the in-line kneader has gained acceptance, and is now considered the standard kneader for producing the highest quality product.

PLANETRON® heavy-duty vertical kneading machines are always used when high-viscous materials have to be kneaded intensively and absolutely free of contaminations. During the kneading process, the product neither touches shaft seals or bearings, and thus remains absolutely free of even the smallest contaminations.

The horizontally arranged kneading blades of the IKA®- DUPLEX and ZETA heavy-duty kneading machines are able to process mixtures of the highest viscosities. Due to the increased shear forces achieved by the DUPLEX blade geometry, the kneading time can be reduced by up to 30% - at improved product quality. IKA® kneaders are equipped with many useful features and controls. IKA® is setting a standard for kneading machines.