



# KINEMATICA

Homogenizing perfected.



## MEGATRON®

**INDUSTRIAL LINE**

### MEGATRON® MT-VPR and MT-VPC series

Pilot Plant and Production machines for induction & dispersion of powders in liquids

# MEGATRON® MT-VPR and MT-VPC

## Powder Induction. How it works.

Two different inline systems: continuous and recirculation processing provides the ultimate in application versatility.

The patented MEGATRON® Powder Induction line answers virtually every powder induction problem through its specific aspiration method which creates a very strong vacuum. In addition, specially designed powder inlet geometries prevent bridging / clogging of the powder inlet. Throughout the process the Kinematica system is able to keep highest levels of suction for the most part independent from the liquid throughput of the machine. This is very important specially when working with higher solid concentrations and rising viscosities. Depending on the characteristics of your specific powder and your formulation we can obtain concentration levels of up to 80%.

Our system has proven to substantially decrease processing time and provide better product quality than other commonly used systems.

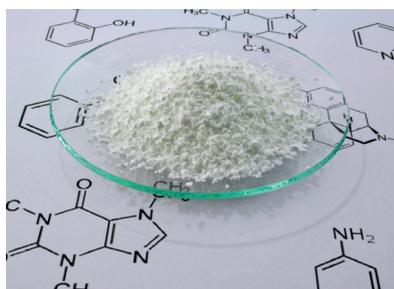


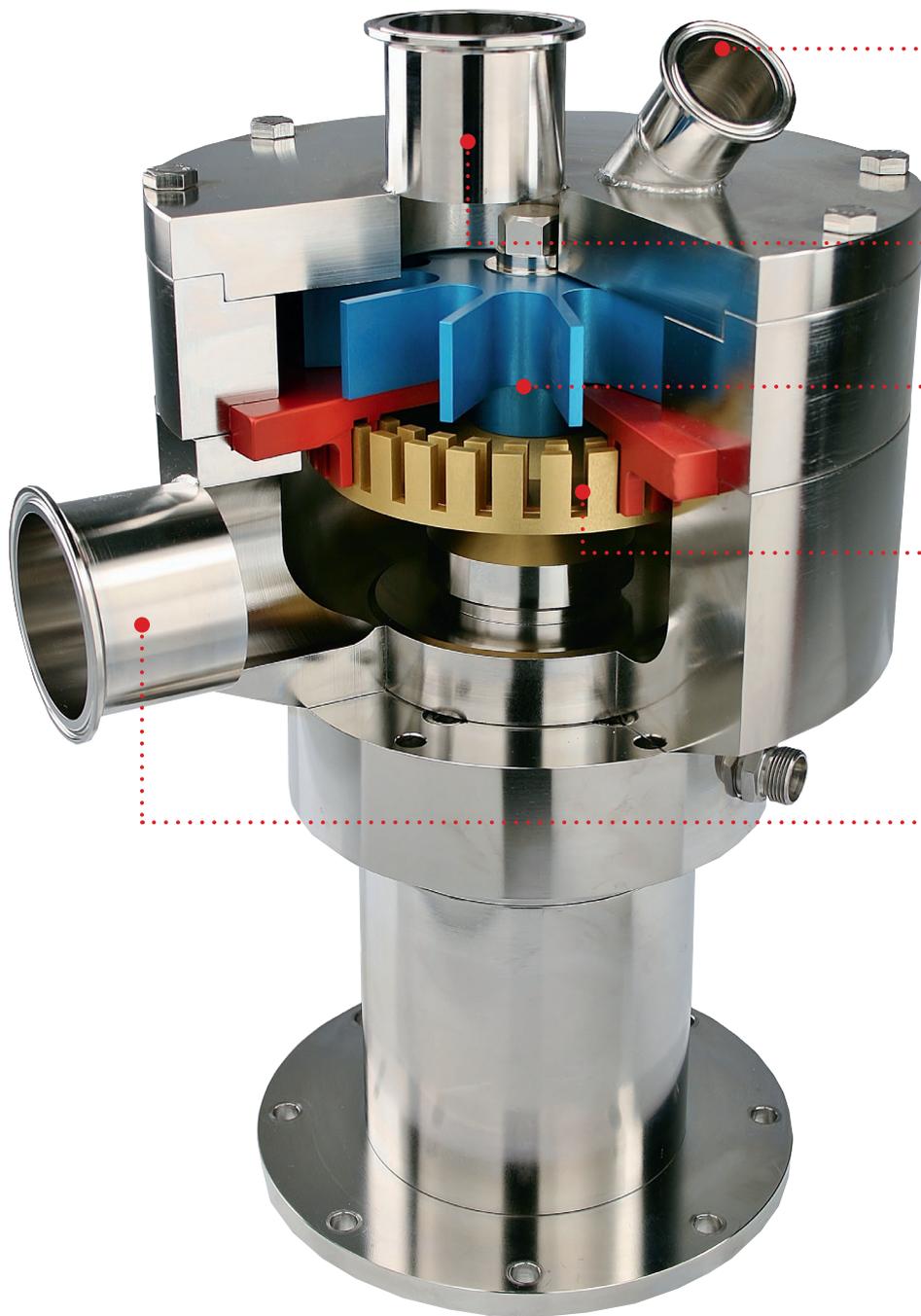
The MEGATRON® MT-VP solution comes as dedicated development that KINEMATICA engineers have perfected over decades of continuous research & development and long-lasting experience especially to fit Powder Dispensing Applications.

The MEGATRON® MT-VP is available in several design and shapes to fit any physical constraint. With the MEGATRON® MT-VP the integration to your power handling system is seamless (I.E. connection to big-bag handling solutions).

The MEGATRON® MT-VP architecture leverage the wide KINEMATICA experience within several Industries to deliver large-scale and compact solutions to fit a wide range of Throughputs, by keeping efficiency high.

The MEGATRON® MT-VP architecture leverage our patent (EP 1674151B / US 8398294B2 / JP 4869250B2) that allows the powder suction capacity to be almost decoupled form the flow/rate performances. With the MEGATRON® MT-VP your media viscosity fluctuations (raising with reduced flow rate) are not anymore a key concern.





**Powder Inlet**

The powder inlet is connected to a hopper/funnel, big bag, lance or anything else that brings the powder to the working chamber.

**Product Outlet/Inlet**

Depending on the system configuration this is the product outlet or inlet.

**Powder wetting chamber**

The induction rotor creates a high vacuum to aspirate the powder and wets it on impact.

**Homogenizing chamber**

After the successful wetting of the solid particles the wetted powder goes through a rotor/stator designed for your application to obtain maximum dispersion and particle size reduction effect.

**Product Inlet/Outlet**

Depending on the system configuration this is the product inlet or outlet.

According to machine directives complying with CE, 3A and several other standards such as for CIP/SIP and Cleanroom. Also available for certain Ex applications.



**APPLICATION EXAMPLES**

- Silica
- Milk powder
- Salts
- Carbopol
- Tallow
- Barium sulfate
- Lime (granular)
- Calcium carbonate

- Alumina (aluminum oxide)
- Natural gums (i.e. pectin, Arabic, etc.)
- Sugar (granulated)
- Carboxymethylcellulose (CMC)
- Titanium dioxide
- Bornitrid and other graphites
- Color pigments
- Bentonite, clays and other kaolin
- Dairy powders

- Wax powers
- Soy powder
- Aerosols
- Ceramics
- Cocoa
- Coal powders
- Starch
- Graphites
- Flour

# Recirculating or Continuous.

Our 2 in 1 concept.

The 2 in 1 concept allows high performance powder induction even with rising viscosity and decreasing flow rates with no need for additional equipment.

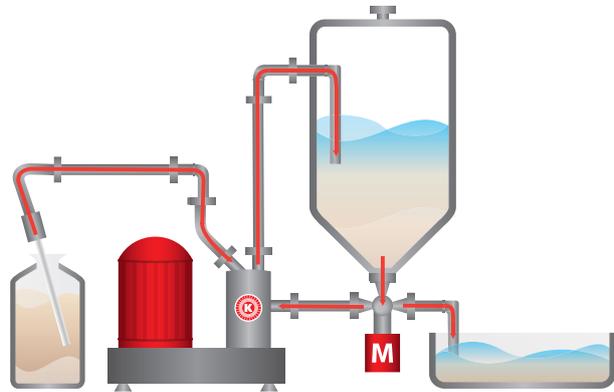
## MEGATRON® MT-VPR

### Powder induction designed for recirculation

The MT-VPR working chamber has a powder induction section in which the powder is induced and wetted and a homogenizing section, where the then wetted powder is dispersed in the liquid. The MT-VPR requires a recirculation process. During the initial phase the non-wetted powder and liquid actually flow in opposite directions. The powder induction rotor through its unique design creates strong aspiration forces to draw the powder in and force it into the liquid, which is then circulated through a vessel. In the second pass the wetted powder goes from the vessel through the rotor/stator for dispersing and any required particle size reduction/deagglomeration. This process continues until the wetted powder is uniformly dispersed and particle sizes are achieved according to the application requirements. The major advantages of our system are reduced processing times, less dust creation and degassing effect through recirculation vessel improved product quality.

## IN GENERAL

- The MT-VPR system is used for processing fixed amounts of powder and liquid
- No powder dosing systems are required
- Additional feed pumps are not needed except for high viscosity applications
- Connects easily to existing process tanks



## WE OFFER A WIDE RANGE OF GENERATORS FROM COARSE TO FINE, TO ACHIEVE THE OPTIMUM PARTICLE SIZE IN DISPERSIONS



All of our generators are made in-house to ensure the best quality workmanship and functionality, according to our customer's expectations.

## MEGATRON® MT-VPC

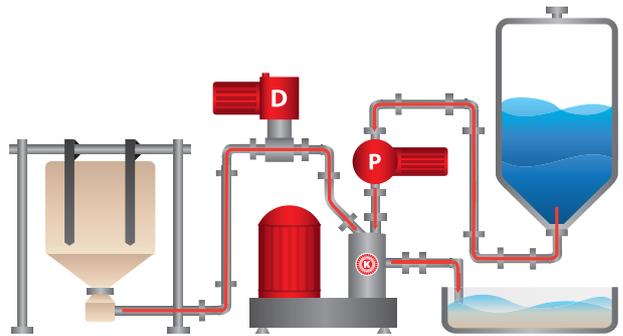
### Powder induction designed for one pass processes

The MT-VPC working chamber functions are the same as for the MT-VPR only that this process is designed for continuous operation and doesn't require a recirculation. The powder and liquid are flowing in the same direction. The powder is forced into the liquid by the powder induction impeller, then passes directly through the rotor/stator for the required dispersion and particle size reduction effect and flows directly into the holding vessel. This process requires precise dosing and metering equipment to produce a homogeneous end product.

### IN GENERAL

- Processing of non-fixed or infinite amounts of powder and liquid, both added with controlled flow rates to produce a dispersion with the desired ratio of powder to liquid in a single pass

- Requires feed/dosing pumps to guarantee homogeneous end product
- Handles back pressure for increased residence times in working chamber
- Excellent to use for very light, fluffy or dusty type powders with less dust creation
- Can also be operated in a recirculation mode with additional processing tank



We are able to provide custom designed rotor/stator combinations to handle the most difficult particle size reduction applications.

# MEGATRON® MT-VPR and MT-VPC.

Standard configurations.

The patented system (EP 1674151B / US 8398294B2 / JP 4869250B2) includes at present various sizes with a throughput from approx. 1000l/h to 70 000l/h – related to water and depending on the used dispersing generator. Our engineering team will work with you to integrate the MEGATRON® MT-VPR and MT-VPC seamlessly into your production system.



MT-VP 45



MT-VP 160



MT-VP 95



MT-VP 65

## TECHNICAL DATA FOR OUR STANDARD CONFIGURATIONS

Product	Ø Rotor	Throughput (Water)	Powder suction capacity	Circumferential speed	Max. speed	Motor
MT-VP 2 / 45	45 mm	1000l/h	70 kg/h	25 m/s	10 600 rpm	up to 4.0 kW
MT-VP 2 / 65	65 mm	3000l/h	200 kg/h	25 m/s	7700 rpm	up to 11.0 kW
MT-VP 2 / 95	95 mm	9000l/h	500 kg/h	25 m/s	5200 rpm	up to 22.0 kW
MT-VP 2 / 160	160 mm	25 000l/h	1200 kg/h	25 m/s	3000 rpm	up to 37.0 kW
MT-VP 2 / 220	220 mm	40 000l/h	2000 kg/h	25 m/s	2300 rpm	up to 55.0 kW
MT-VP 2 / 300	300 mm	70 000l/h	3500 kg/h	25 m/s	1700 rpm	up to 75.0 kW

Figures are not intended to be binding and may vary depending of media/products and configurations

# Kinematica Engineering Solutions.

Your application is our focus – your satisfaction is our goal.

Our specialty is designing and manufacturing dispersing and mixing equipment. Usually our equipment is a small, but integral part of a larger processing system. Therefore, we have the experience, knowledge and capability of providing the entire process system including powder handling, feeding and dosing systems, controls, etc. to accomplish your complete processing application goals.

## THIS MAY INCLUDE BUT IS NOT LIMITED TO

- Big bag handling
- Simple to more advanced hopper designs
- Feeding and dosing systems
- Pumps
- Online viscosity measuring as an in process QC tool
- PH measuring
- Temperature control
- Controls and regulations
- And many more options



Supported by AGIERRE®

Our team of experts which include process, mechanical and design engineers, along with application specialists, each of whom has at least 20 years of experience, will sit down with you and be with you every step of the way to be sure that the final product is exactly what is needed for your application.

We also understand that every process, product and application is different and will require different approaches. This often requires testing which can be done at our main locations in Switzerland, USA, Japan or India free of charge. If you prefer, testing can be done at your site with a unit

for a nominal monthly rental fee which can then be applied towards the purchase of the agreed upon system.

Since the founding of Kinematica, we have supplied customized solutions for specialized applications for our customers. We now stand ready to provide you with the best possible solution to your powder induction needs.

Please contact your closest Kinematica representative who will put you in touch with our engineering team for further discussions.



**UNCOMPRO-  
MISING  
QUALITY**



**INDUSTRY-  
LEADING PER-  
FORMANCES**



**UNPARAL-  
LELED  
CHOICE AND  
SCALABILITY**



**EASE-OF-USE**



**INVESTMENT  
PROTECTION**



**CONNECTED  
TO THE  
WORLD**



# Our mission. Your solution.

Homogenizing perfected: for every industry.

Kinematica's broad portfolio of solutions can address almost every dispersing application for the pharmaceutical, cosmetic, chemical, food and life science industry. Innovative powder-induction systems, solutions for completely sterile environments, or fully-compliant ATEX architecture are just some examples of the broad portfolio that Kinematica can offer with true scalability from pilot-plant to large plant configurations.

Our state-of-the-art technology, in addition to a professional consulting and engineering suite of services, can address a variety of processes such as blending / mixing / stirring, emulsifying, deagglomerating, foaming, crushing and homogenizing with particle size reduction from a few micrometers down to nanometers in size: the proprietary design and innovative geometry of our aggregates / generators can downsize and provide perfect statistical particle distribution for the finest emulsions / suspensions and foam dispersions.



**PHARMA**



**CHEMICAL**



**COSMETICS**



**FOOD**



**LIFE SCIENCE**



## HEADQUARTERS

### Kinematica AG

Luzernerstrasse 147a  
CH-6014 Luzern  
Switzerland

Phone +41 41 259 65 65

Fax +41 41 259 65 75

info@kinematica.ch

kinematica.ch

## EUROPE

**Kinematica GmbH** / Germany / Phone +49 7634 504 800 0 / info@kinematica.de

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## NORTH AND SOUTH AMERICA

**Kinematica, Inc.** / USA / Phone +1 631 750 6653 / info@kinematica-inc.com

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## RUSSIA AND CIS

**Kinematica AG** / Switzerland / Phone +41 41 259 65 65 / info@kinematica.ch

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## GREATER CHINA

**Kinematica Asia Limited** / Hong Kong / Phone +852 249 769 65 / info@kinematica.ch