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Conical Agitator Systems

Trendsetting Mixing Technology

VISCO JET Rührsysteme GmbH
Daimlerstraße 1
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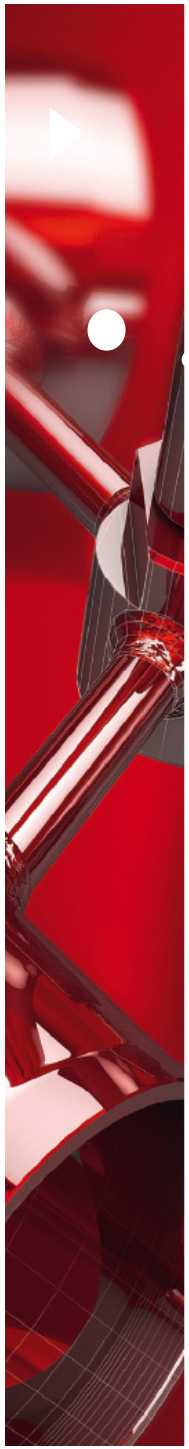
Germany



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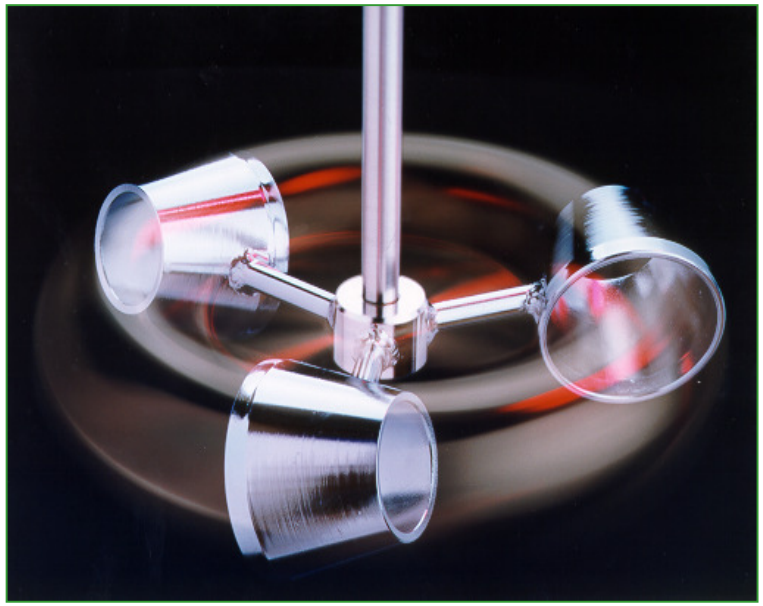
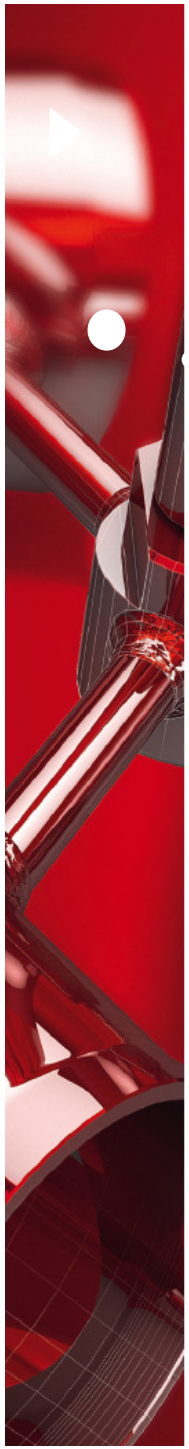
- The Fundamentals of VISCO JET®
- Flow Characteristics
- VISCO JET® Impellers
- Application Areas
- Product Range
- Examples



Trendsetting agitator systems



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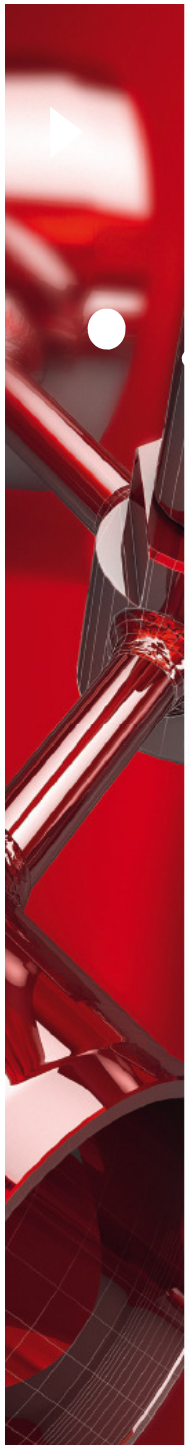
Main Mixing Applications

5 different mixing tasks:

1. Homogenization
2. Suspension
3. Dispersion
4. Aeration / Deaeration
5. Heat transfer



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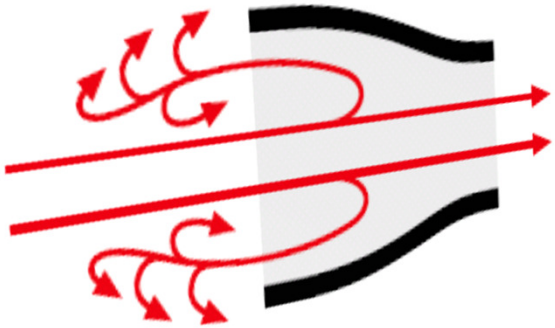
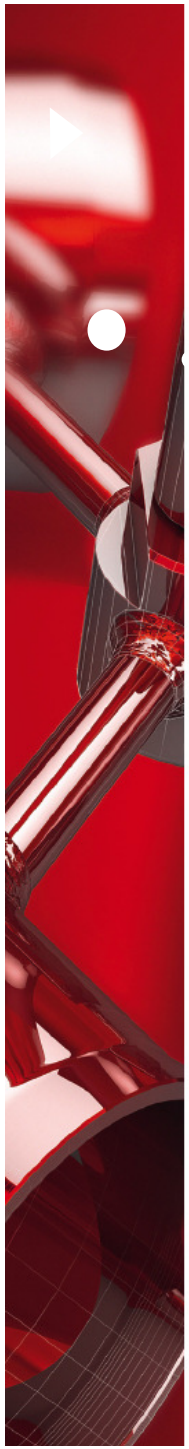
Principle



- Venturi effect
- accelerated laminary flow
- overlapping flow
- turbulent mixing

The medium is stimulated to move itself!



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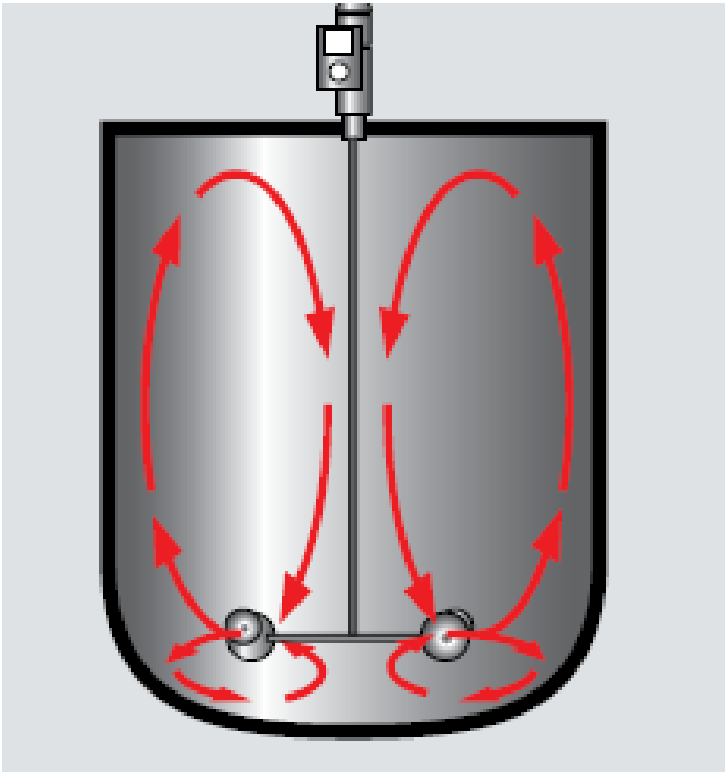
Principle

- two main whirls
- homogeneous mixing
- flow especially in the corners and at the bottom
- minimal vortex formation



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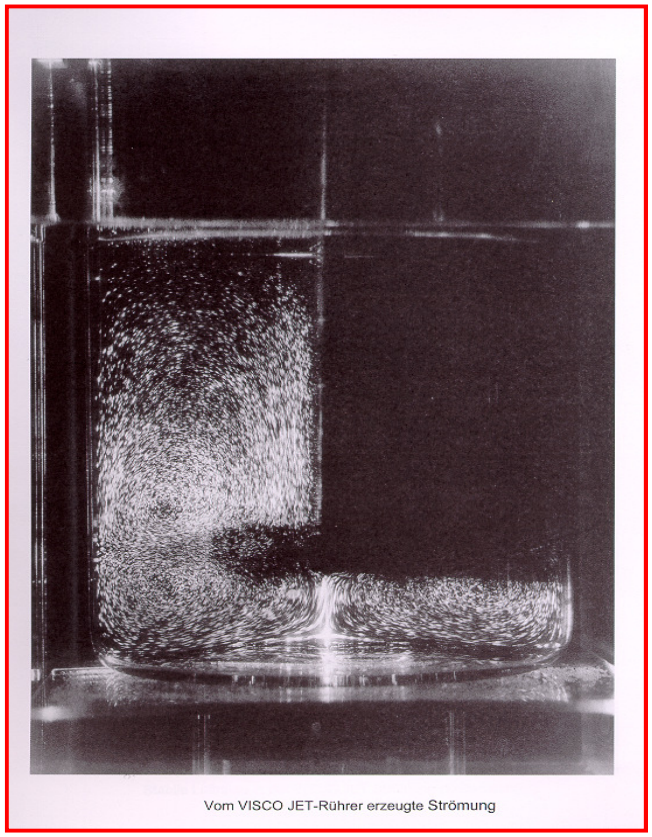
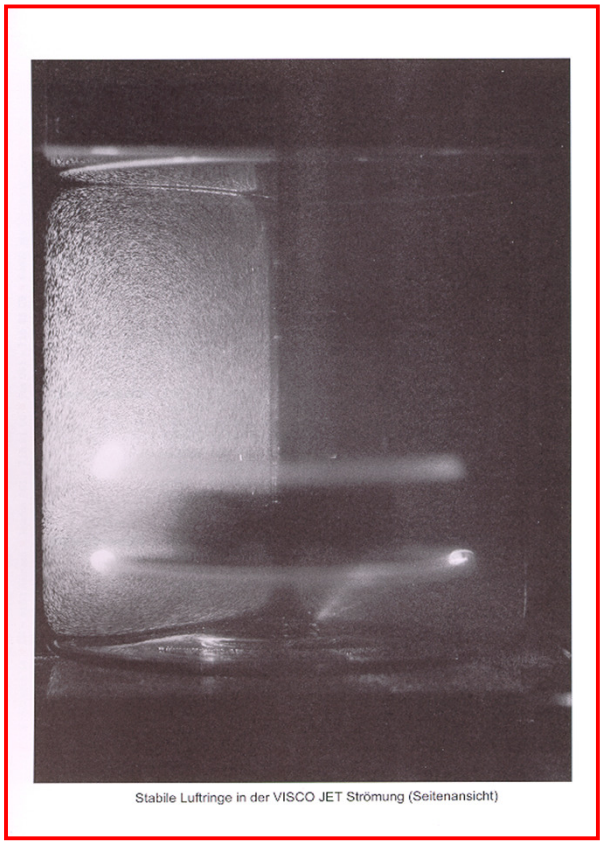
Light-Section Images



Vom VISCO JET-Rührer erzeugte Strömung

creates two main whirls



Stabile Luftringe in der VISCO JET Strömung (Seitenansicht)

De-airation

Trendsetting agitator systems

Conical Systems– The Advantages

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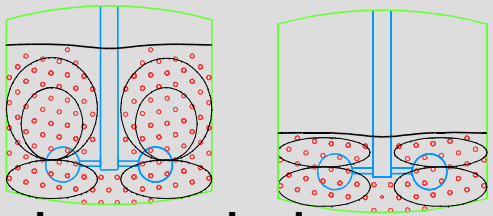
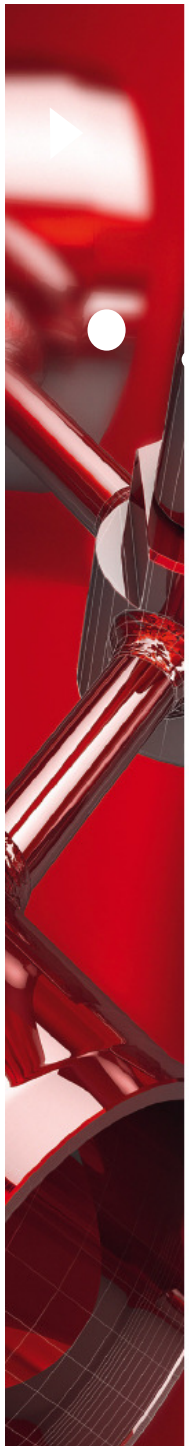
- Low mixing speed
  - → sensitive mixing procedure
  - → no heating up
  - → low arbrasive wear
  - → low forces
- Minimal vortex formation
  - → No air pocket formation
  - → No foam formation
- Energy savings due to reduced power consumption

  $P = Ne \times \rho \times (n/60)^3 \times d_2^5$

  → the low rotation speed optimizes the power consumption significantly
- Uncomplicated design and installation
  - → Usually one impeller level
  - → Small mixer drives
  - → Usually no top bearing or bottom bearings required
  - → No baffles



- Easy cleaning.....



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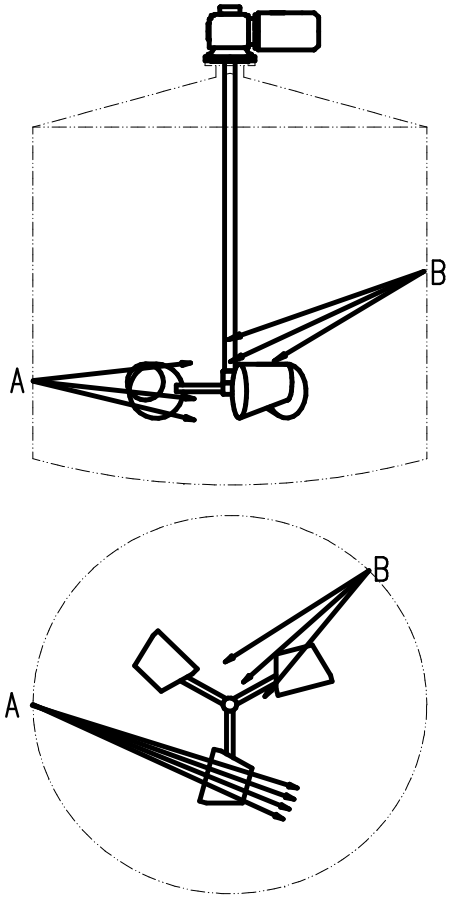
Cleanability



- Only one or two nozzles are required to clean cone impeller

→ CIP method

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VISCO JET® Mixing Elements

VISCO JET® Classic
with “closed“ cones

Spiral version, 3-fold, for high
viscosity products

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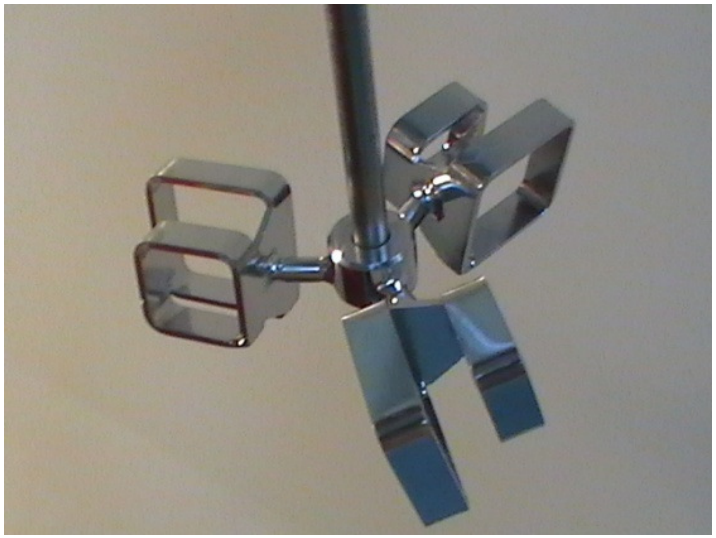
Limits?

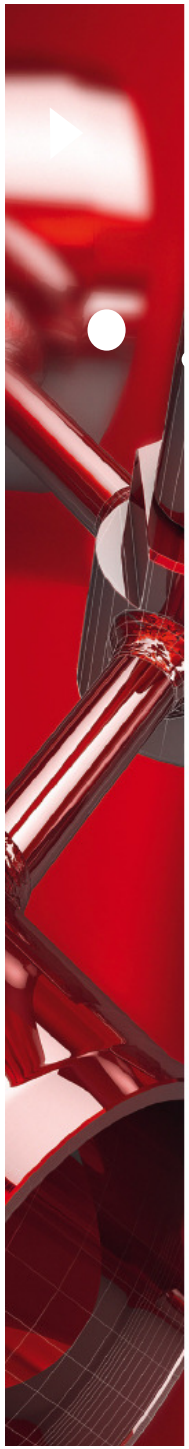
Not suitable for mixing applications that require high shear rates

(e.g. dispersion paints, lumping powders) …. until……

…. VISCO JET CRACK was designed



VISCO JET CRACK



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Application Areas

- Application in watery up to highly viscous liquids
- In all tank sizes from 0.25-400,000 gallons (1l - 1,500,000l) and more
- For use in horizontal tanks, containers, silos and other vessels
- Fields of Applications: Coatings, paper industry, food, beverage, confectionary, cosmetics, pharmaceutics, chemistry etc.

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Agitation in Laboratories with VISCO JET® VJ100 and VJ900

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Agitation in Laboratory and Pilot Plant with VISCO JET® VJ150

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Agitation in IBC-Containers with VISCO JET® VJ350

- mixing in transport container
- transfer to another container is not necessary
- for viscosities up to 40.000 mPas

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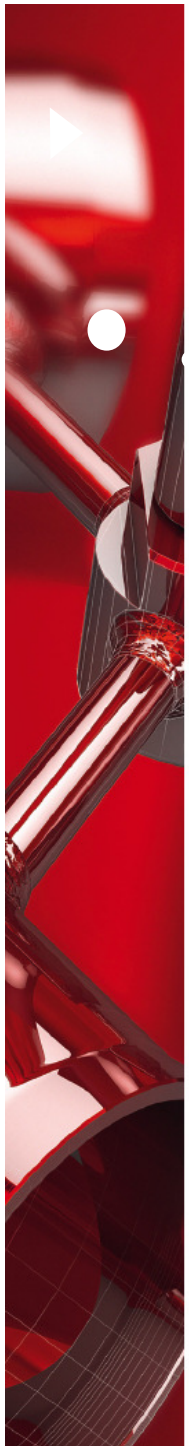

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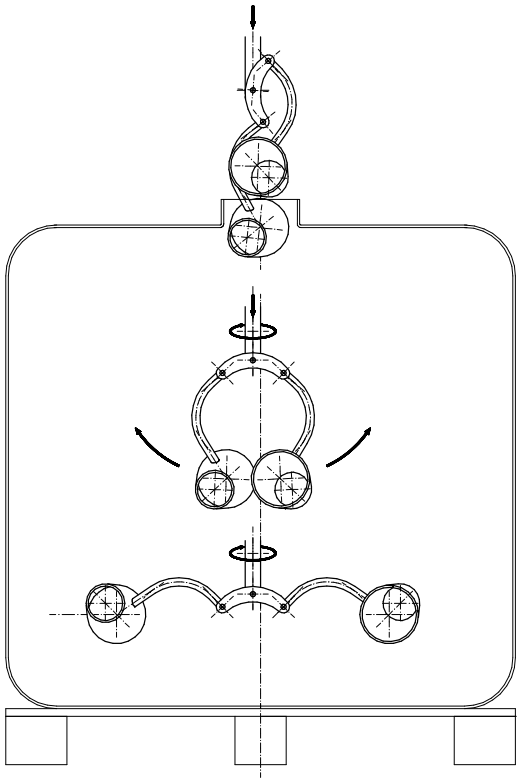
Operation of the VISCO JET® Tornado



- can be inserted into closed containers through openings with Ø 150 mm
- the impeller unfolds
- due to the centrifugal moment the impeller unfolds to an outer diameter of 650 mm
- easy to clean after use

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Operation of the VISCO JET® Tornado

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An Agitator for Stainless Steel Containers: Container Agitator VJ520

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VISCO JET® VJ370/VJ380 Agitator for Closed or Open Drums

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Column Agitators for All Volumes and Sizes of Transport Containers

VJ400 BH
column agitator with manual lifter
for buckets and vessels 5 – 200 l

VJ400 VA column agitator for fully automatic operation with PLC control sytem for serial production

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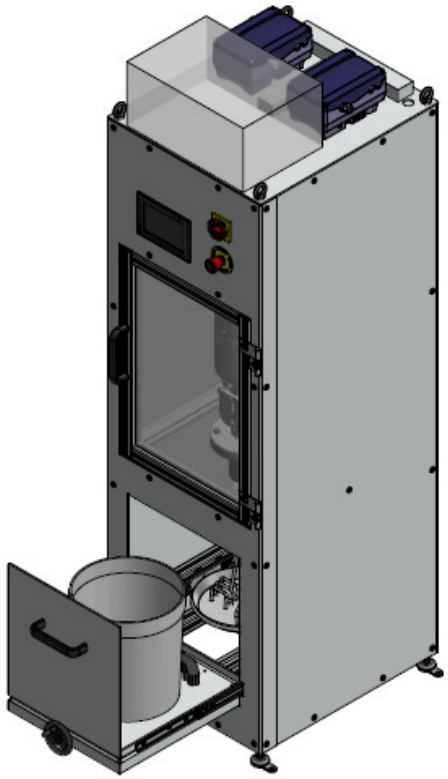
NEW – VJ411, Semi-automatic Agitator



VISCO JET® Column Agitator VJ411,

up to 10 programmable mixing procedures for buckets and bin with max. diameter 340 mm and max. height 350 mm

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NEW – VJ405

Programmable semi-automatic or full-automatic agitators for highest safety requirements

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VISCO JET® wall mounted/floor mounted column agitator VJ421/ VJ431with electric lifting 12000-18000 mm for highest demands in function and cleanability

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Column Agitators – The New Generation

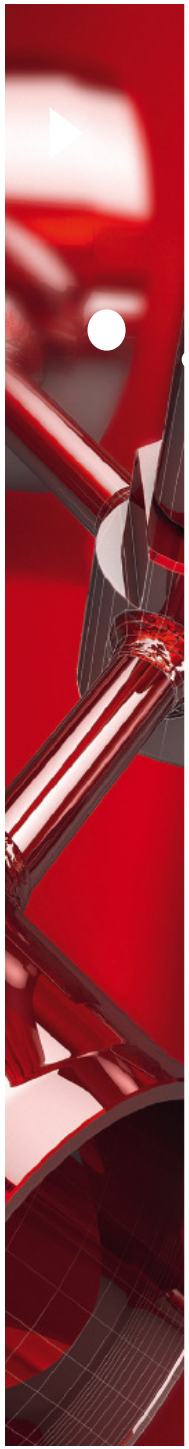
VJ450 with manual lifter, lifting height 1200 mm

VJ455 mit electric lifter, lifting height 1200-1400 mm

VJ480 Mobile Column with manual lifter, lifting height 1200 mm

VJ485 Mobile Column with electric lifter, lifting height 1200-1400 mm

Trendsetting agitator systems



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VISCO JET® Tank Agitator VJ500

Trendsetting agitator systems

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Example:
Paper factory in Switzerland

Volume:	**250.000 litre**	**Height: 15 m**
Product:	**Kaolin pigment slurry**	**Diameter: 4,8 m**
Viscosity:	**500 mPas**	**Density: 1800 kg/m³**

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Example:
Paper factory in Switzerland

Paddle impeller 4 levels with baffles

=> Bad mixing result with strong sedimentations!

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Example:
Paper factory in Switzerland

Now:
Use of a VISCO JET®,
d2 = 2.800 mm, 2 x 2-fold

Result:
↳ Excellent mixing result
↳ No sedimentation

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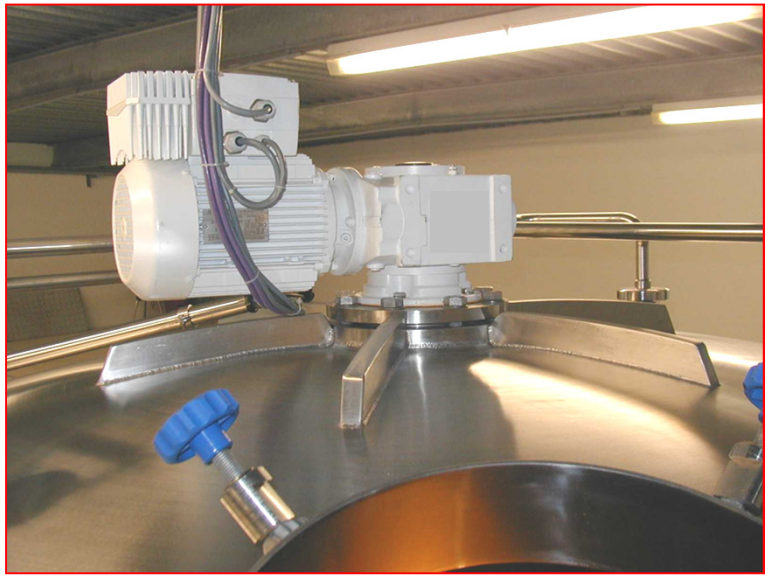
Homogenizing ….



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… in 8 m³ Vessel

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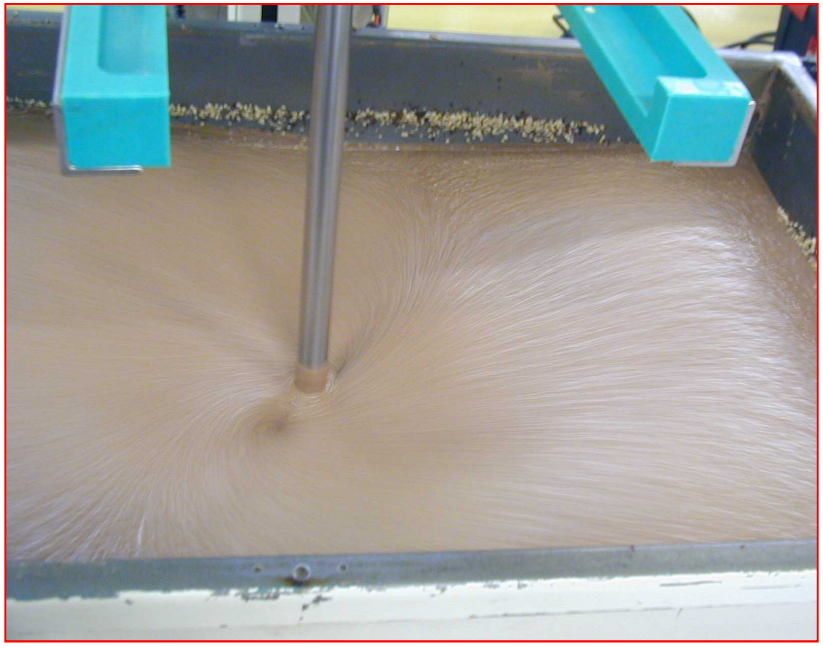
Example:
Suspension in Squared Vessel

Efficient flow in

the corners



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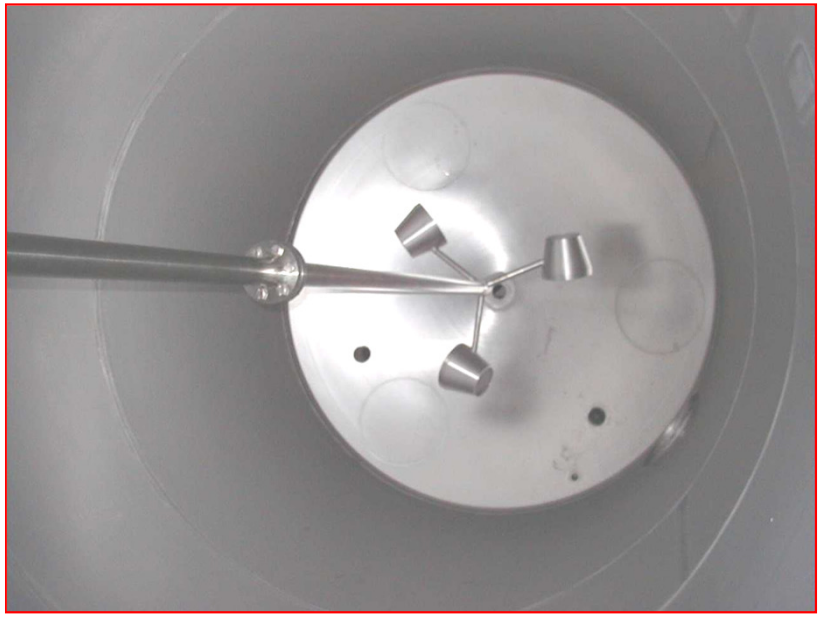
Storage Mixing Tanks for Paints and Plaster



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Storage Mixing Tanks for Paints and Plaster

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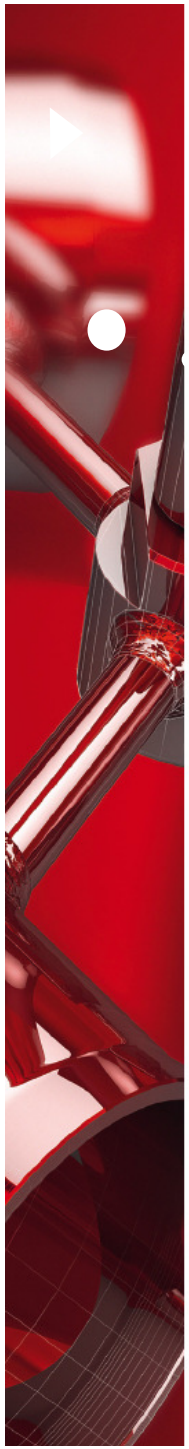
Top Entry VJ500

Side Entry VJ620

Sublevel VJ600

Trendsetting agitator systems



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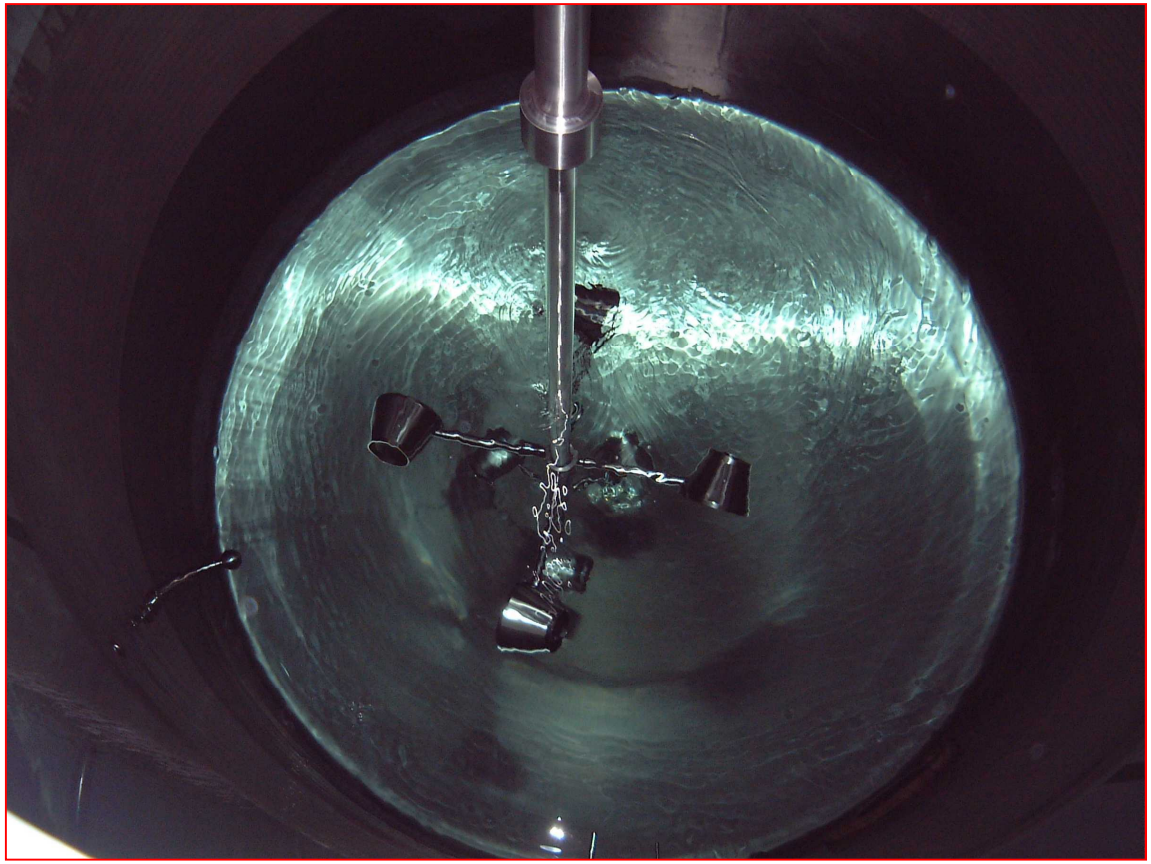
Storage Tank



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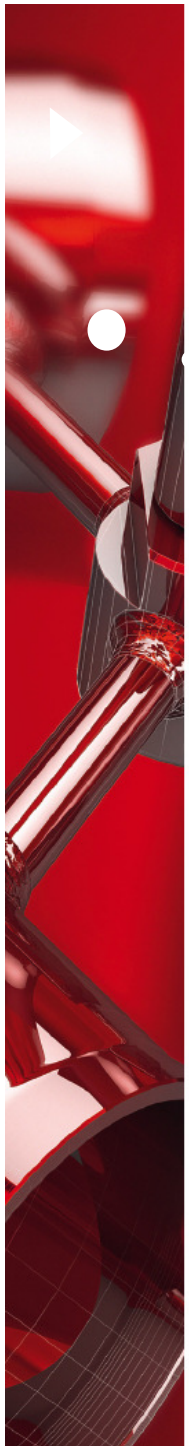
VISCO JET® Tank-agitator Type VJ510

for horizontal tanks

Trendsetting agitator systems



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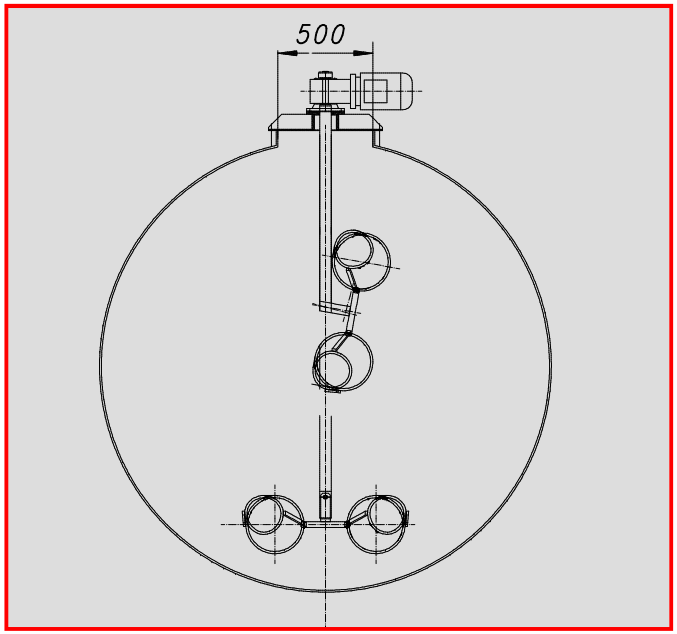
VISCO JET® Tank-agitator Type VJ510

- mixing directly in the transport tank
  => no decanting necessary
- the impeller can be inserted through an opening >= 500 mm
- only one agitator is necessary
- example of a horizontal road tank with 25.000 litre (6,600 gal)
  => drive with 3,0 kW is enough
  => completely homogenized within 7 minutes



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VISCO JET® tank-agitator VJ510

tank 25.000 litre

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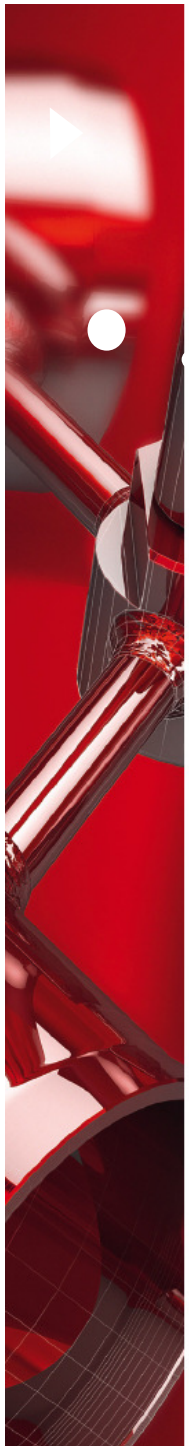

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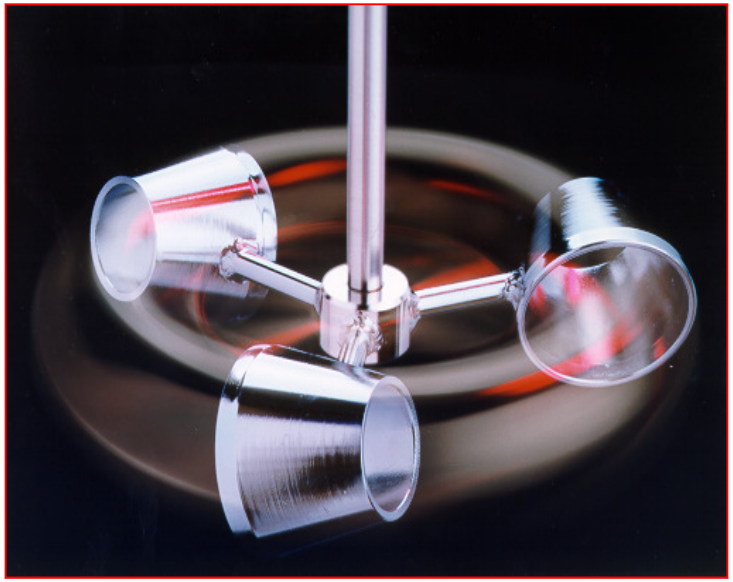
Thank you very much!



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