

Conical Agitator Systems

Trendsetting Mixing Technology

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



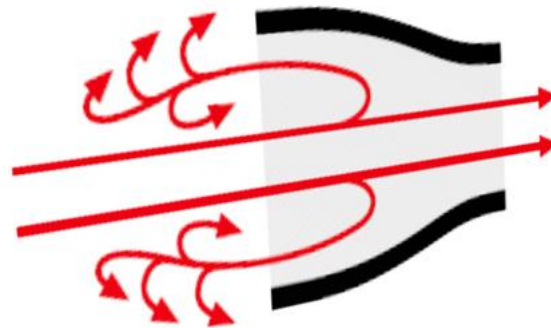
Main Mixing Applications

5 different mixing tasks:

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



Principle

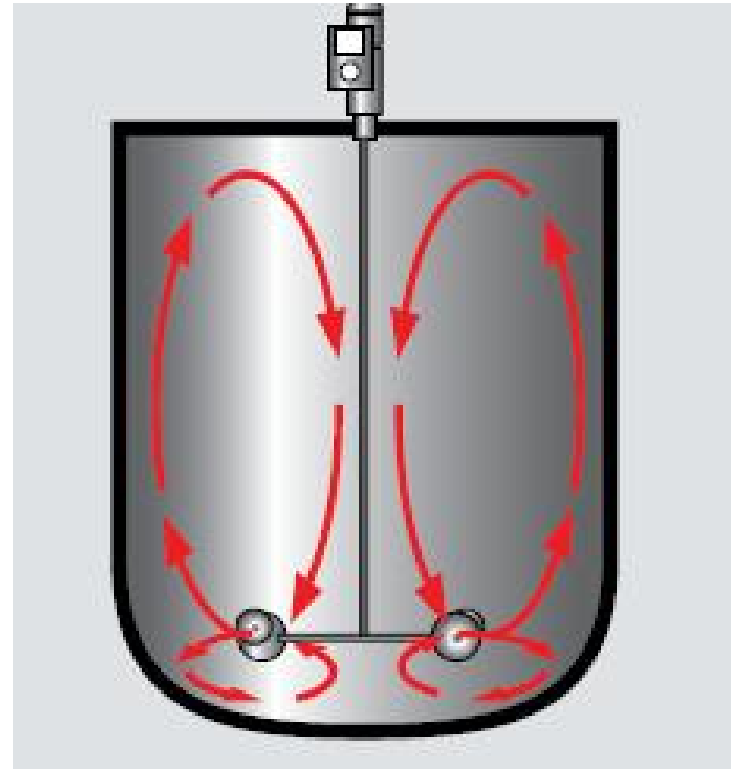


- Venturi effect
- accelerated laminary flow
- overlapping flow
- turbulent mixing

The medium is
stimulated to
move itself!

Principle

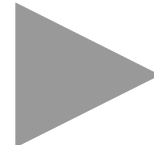
- two main whirls
- homogeneous mixing
- flow especially in the corners and at the bottom
- minimal vortex formation



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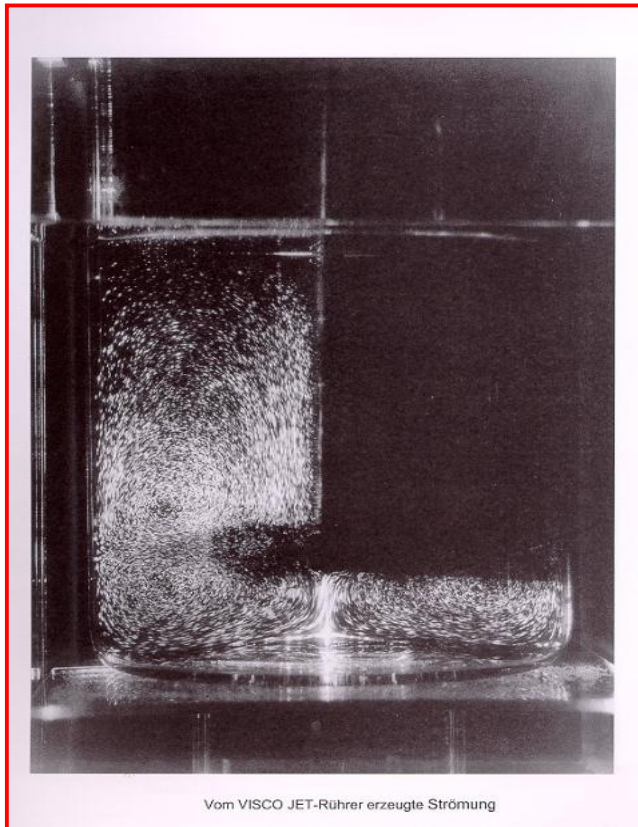


Propeller

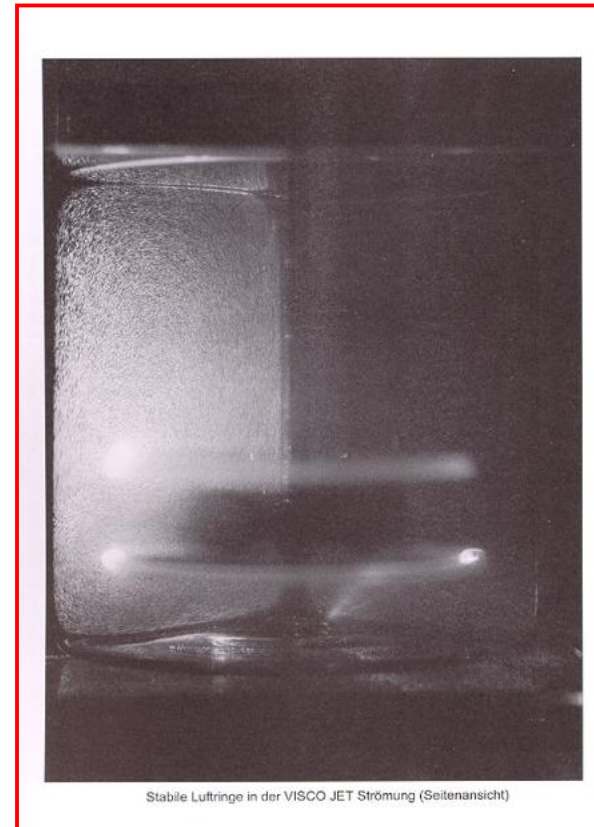


 Trendsetting agitator systems

Light-Section Images



creates two main whirls

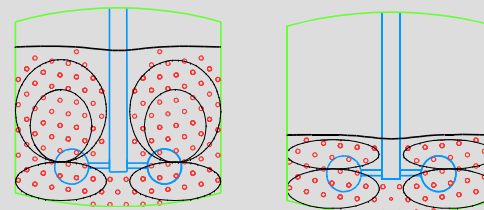


De-aeration

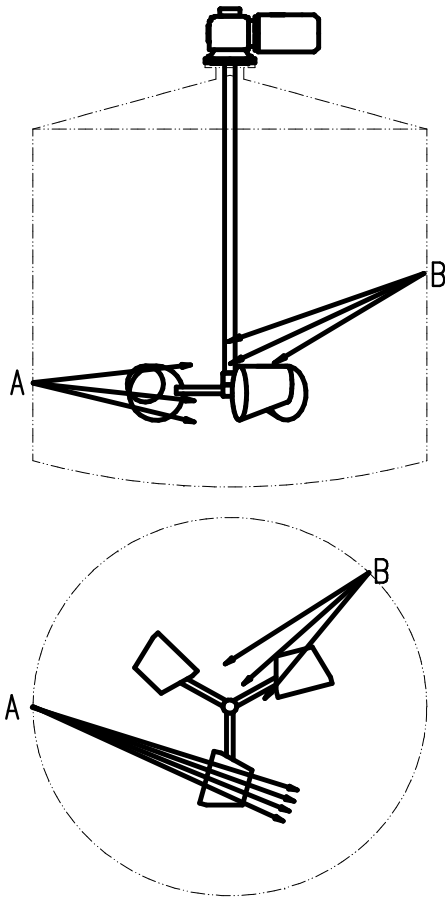
Conical Systems– The Advantages

- 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.....



Cleanability



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

VISCO JET® Mixing Elements



VISCO JET® Classic
with “closed” cones



Spiral version, 3-fold, for high
viscosity products

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



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, pharmaceuticals, chemistry etc.



Agitation in Laboratories with VISCO JET® VJ100 and VJ900



Agitation in Laboratory and Pilot Plant with VISCO JET® VJ150

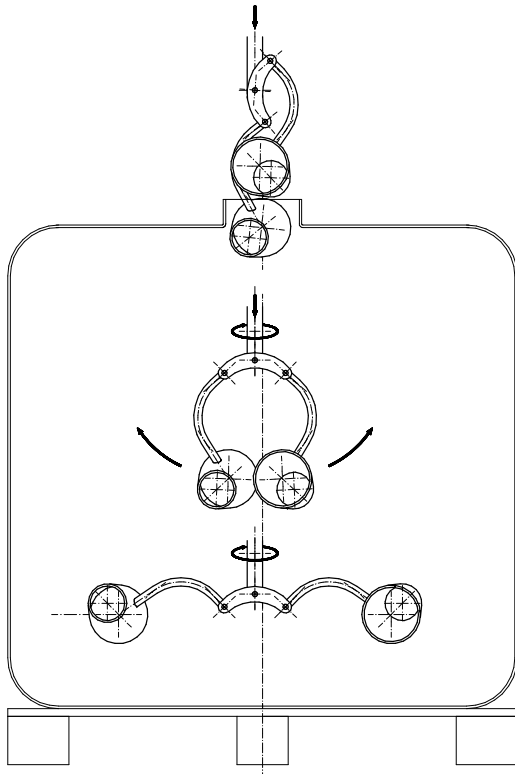


Agitation in IBC-Containers with VISCO JET® VJ350



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

Operation of the VISCO JET® Tornado

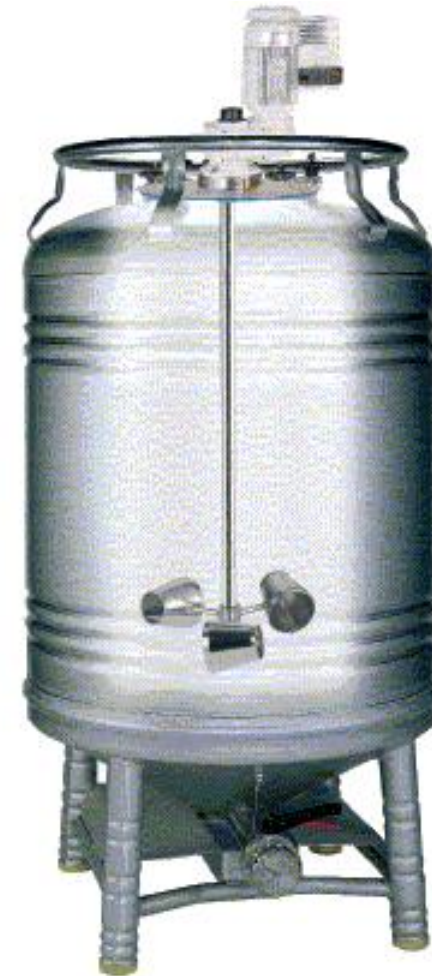


- can be inserted into closed containers through openings with \varnothing 150 mm
- the impeller unfolds
- due to the centrifugal moment the impeller unfolds to an outer diameter of 650 mm
- easy to clean after use

Operation of the VISCO JET® Tornado



An Agitator for Stainless Steel Containers: Container Agitator VJ520



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



Column Agitators for All Volumes and Sizes of Transport Containers

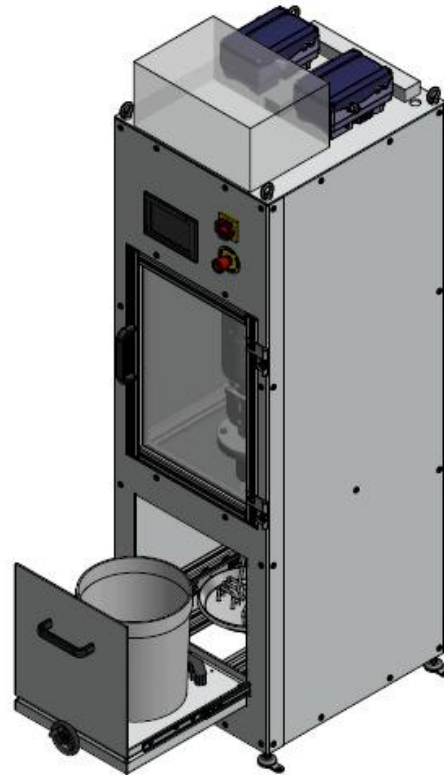


VJ400 BH
column agitator with manual lifter
for buckets and vessels 5 – 200 l



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

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**



NEW – VJ405

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

VISCO JET®
Rührsysteme GmbH



 **Irenasetting agitator systems**



**VISCO JET® wall mounted/floor mounted column agitator
VJ421/ VJ431 with electric lifting 12000-18000 mm for
highest demands in function and cleanability**

VISCO JET®
Rührsysteme GmbH



 **Trendsetting agitator systems**

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



VISCO JET® Tank Agitator VJ500



 Trendsetting agitator systems



Example: Paper factory in Switzerland



Volume: 250.000 litre

Product: Kaolin pigment slurry

Viscosity: 500 mPas

Height: 15 m

Diameter: 4,8 m

Density: 1800 kg/m³

Example: Paper factory in Switzerland



**Paddle impeller 4 levels
with baffles**

**=> Bad mixing result
with strong
sedimentations!**



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



Homogenizing

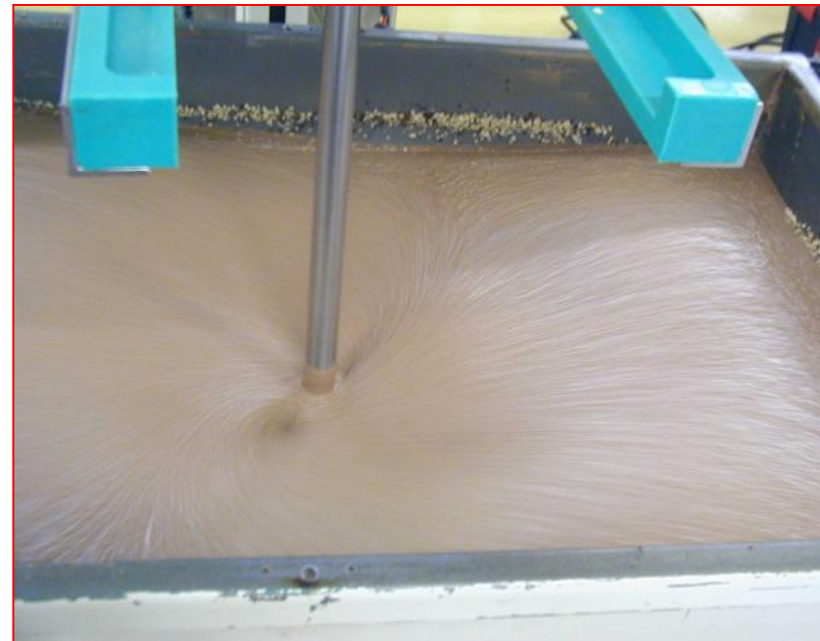
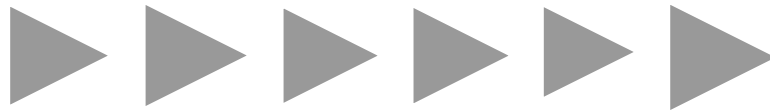


... in 8 m³ Vessel

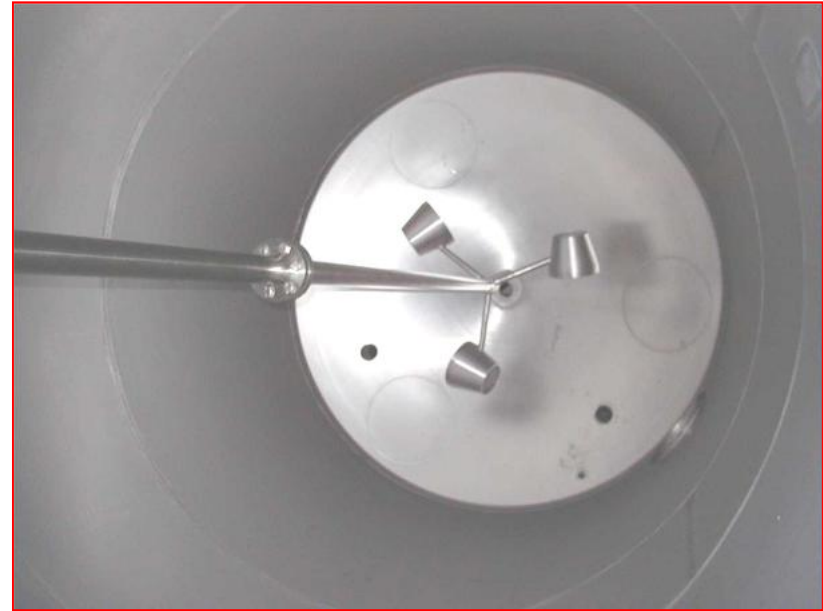


Example: Suspension in Squared Vessel

Efficient flow in
the corners



Storage Mixing Tanks for Paints and Plaster

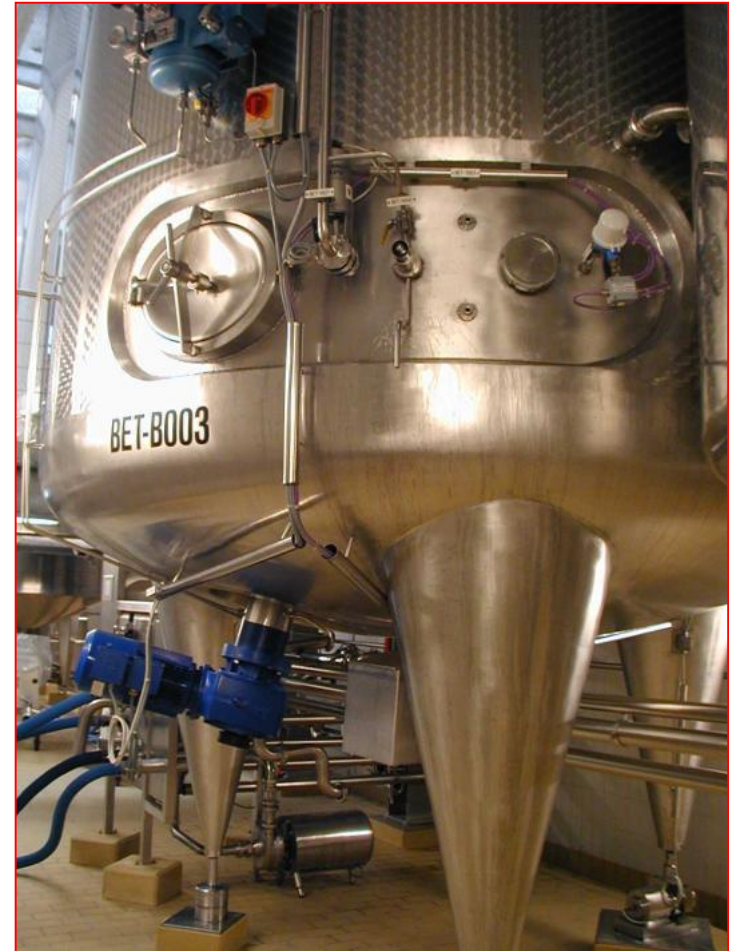


Storage Mixing Tanks for Paints and Plaster





Top Entry VJ500

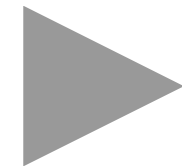
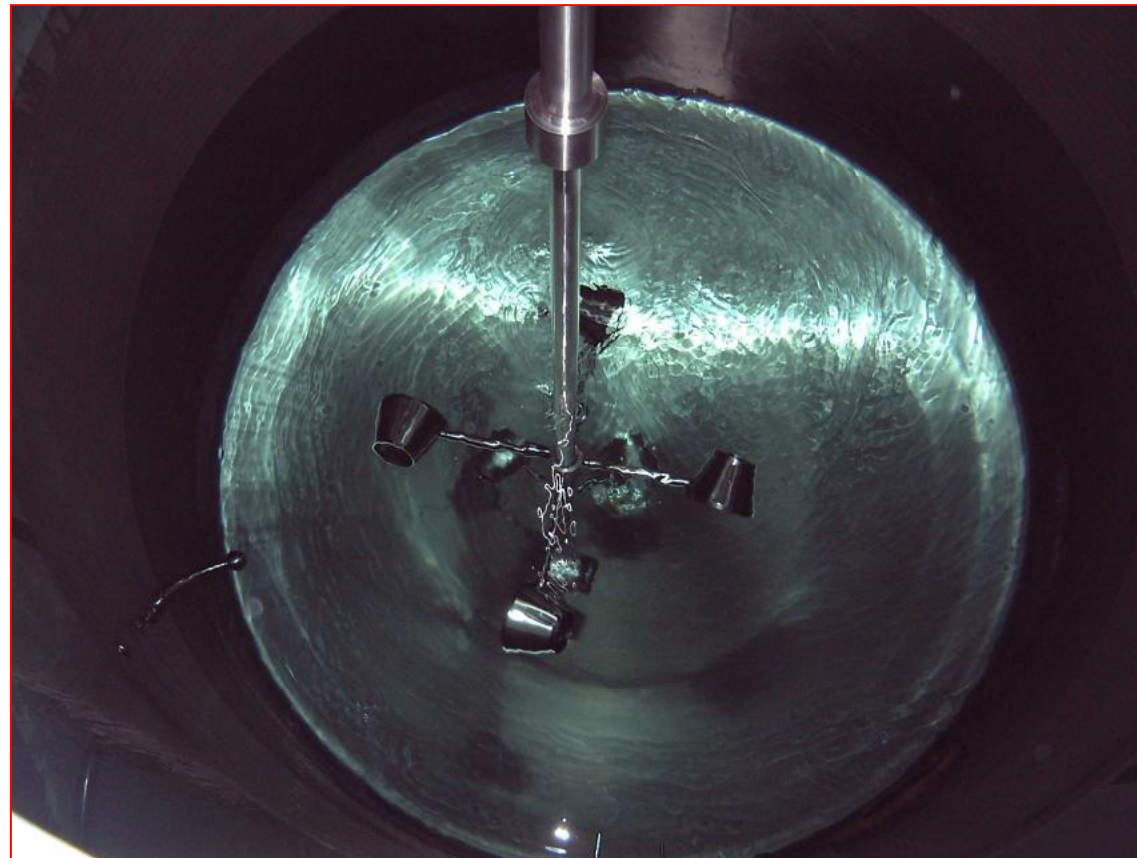


Sublevel VJ600



Side Entry VJ620

Storage Tank



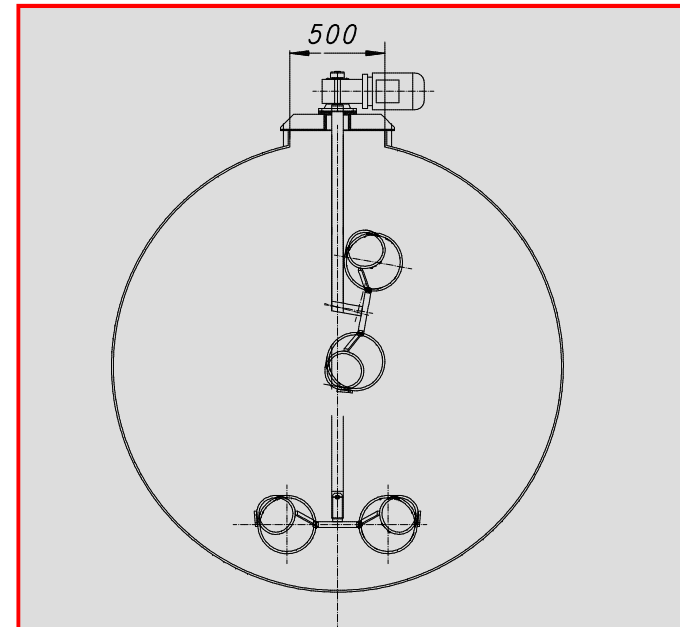
VISCO JET® Tank-agitator Type VJ510



for horizontal tanks

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



VISCO JET® tank-agitator VJ510



tank 25.000 litre



 Trendsetting agitator systems

Thank you very much!

