

# Dispercel

## Dispersing and homogeneising equipment



The Dispercel is an equipment with the dual function of dispersion and homogenisation for batch processes.

### Applications

The application defines the equipment typology:

#### Paper industry

- Type A: dispersion of fillers (bentonite, ...)
- Type RP: dispersion of coating pigments (talc, clay, Ground Calcium Carbonate, ...) at high solids content up to 78% according to the product
- Type RC: mixing of coating colours to quickly obtain a fluid and homogeneous preparation

#### Paint and specialty chemicals industries

- Type P: dispersion of pigments (titanium, etc.), to obtain a required granulometry, with a large viscosity range from 500 to 10 000 mPas.

### Range

Volume (m <sup>3</sup> )	1	1.6	2.5	4	5	7	10	12.5
			A	A	A	A	A	
Type (see applications)	RP	RP	RP	RP	RP	RP	RP	RP
	RC	RC	RC	RC	RC	RC	RC	RC
		P	P		P			

### Benefits

#### Quality and homogeneous product

High shearing rate and stable particle suspension.

#### Process flexibility and energy savings

Adaptation of the speed dispersion to the product type and dispersed volume.

#### Dosing accuracy

Stable construction of the driving unit and low gravity of the equipment ensuring the measurement repeatability.

#### Robust design

Compact and rigid shaft guiding device, without mechanical packing.

#### Reduced and easy maintenance

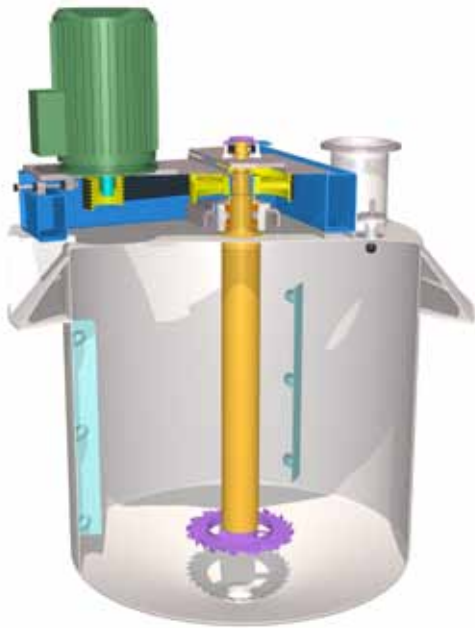
The motor support allows the replacement of wear parts without removing the motor.

# Features and performance

## Main characteristics

The dispersion turbine consists of an apertured disc with peripheral saw-teeth and fixed to a big-diameter shaft. Its design combines efficiently shearing and pumping effects. This mixing efficiency is enhanced by the action of baffles which are welded on the tank internal wall and throw the product back into the centre.

The dispersion unit is suspended and driven by a belt-pulley device assembled on the tank roof. The driven pulley, installed between two guiding bearings, ensures the rigidity of the dispersion unit.



Installed on load cells, the Dispercel enables the in-line and automatic dosing of the recipe components.

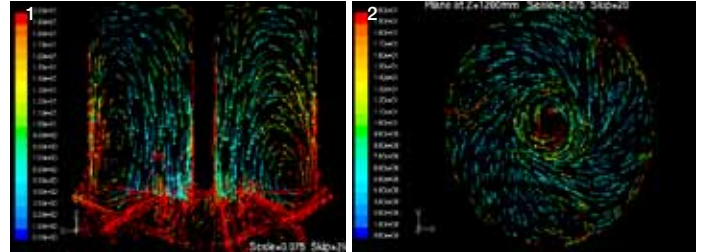
The Dispercel of standard execution is equipped with belt drives and bearings designed for an intensive use, and with fixed cleaning sprayheads. The motor can be supplied with a frequency inverter for use where high flexibility is required.

The Dispercel P is equipped with two dispersion turbines, one located near the tank bottom for the production of small batches. A cone-shaped roof facilitates the cleaning and is, in option, fitted with a spray lance moving up-and-down inside the tank.

All parts in contact with the product are in stainless steel.

## Operation and performance

The computational fluid dynamics (CFD) allows the optimisation of the Dispercel mixing unit and the dispersion performance through visualisation of flow speed vectors (coloured according to a 1/s shear rate, see pictures).



CFD dynamic charts

Are thus highlighted:

- a high-shear rate resulting from the angle of inclination of the saw-teeth located on the turbine outer periphery (Pict. 1). This effect is also influenced by the tooth height as well as the turbine diameter and speed;
- the axial pumping effect from the top to the bottom (Pict. 1) obtained by the action of baffles located under the turbine disk,
- disk apertures allowing a product flow through the turbine to enhance the axial pumping effect and ensuring an optimal circulation for a perfectly homogeneous product (Pict. 2),
- action of baffles (Pict. 2) throwing the product back to the centre, reducing mixing and dispersion times and avoiding a product vortex along the tank wall (doughnut effect).

A shear energy adapted to each application and a high axial pumping effect enable a productivity benefit thanks to short and repeatable process sequences, as well as a constant product quality.

For more information please contact:

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