

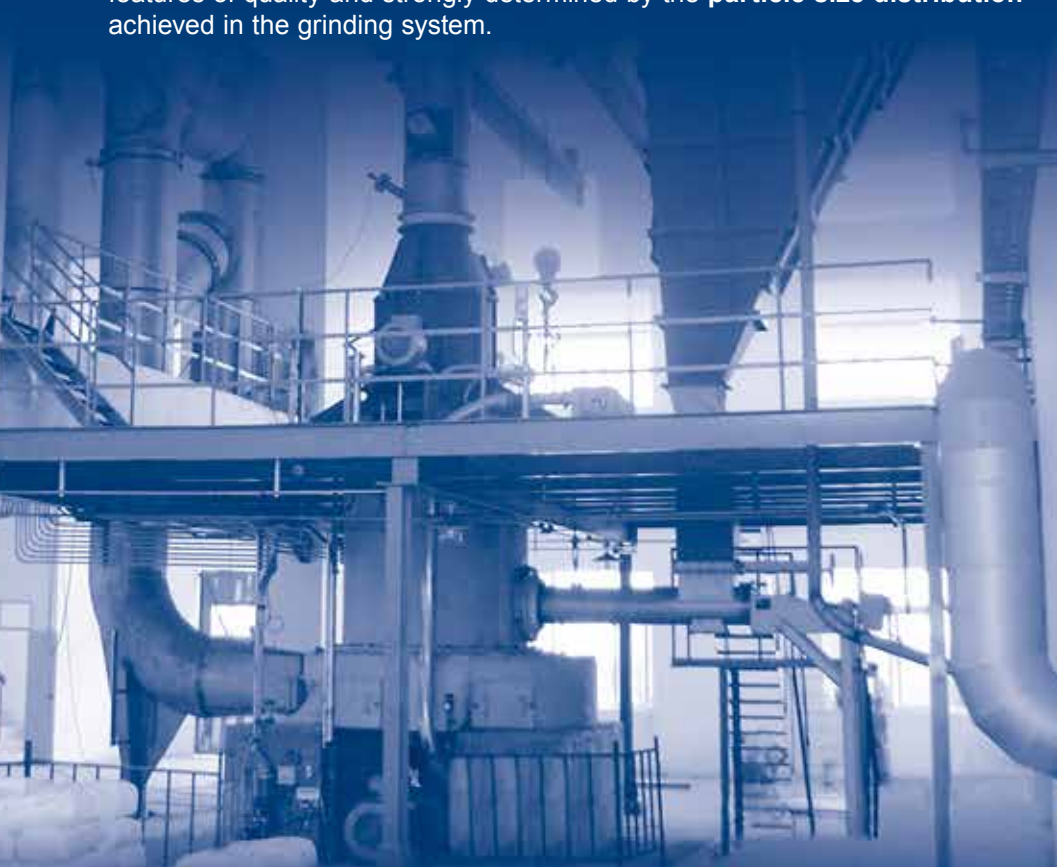
TiO₂ Grinding Systems

Applications, Process, Properties

Titanium Dioxide became the most important industrial white pigment and is widely used in **paints, coatings, paper, plastics, fibers, food, cosmetics and pharmaceuticals.**

The white pigment is made from a black titanium ore and manufactured by the chloride process or **sulphate process**. The **dry grinding** in the sulphate process **follows after calcination** in a rotary kiln.

Opacity, gloss, tinting strength, viscosity and sedimentation tendency are major features of quality and strongly determined by the **particle size distribution** achieved in the grinding system.



WHITENESS



DURABILITY



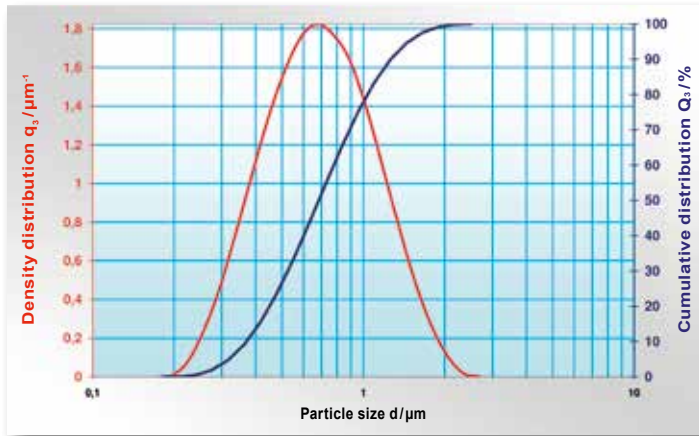
BRIGHTNESS



OPACITY

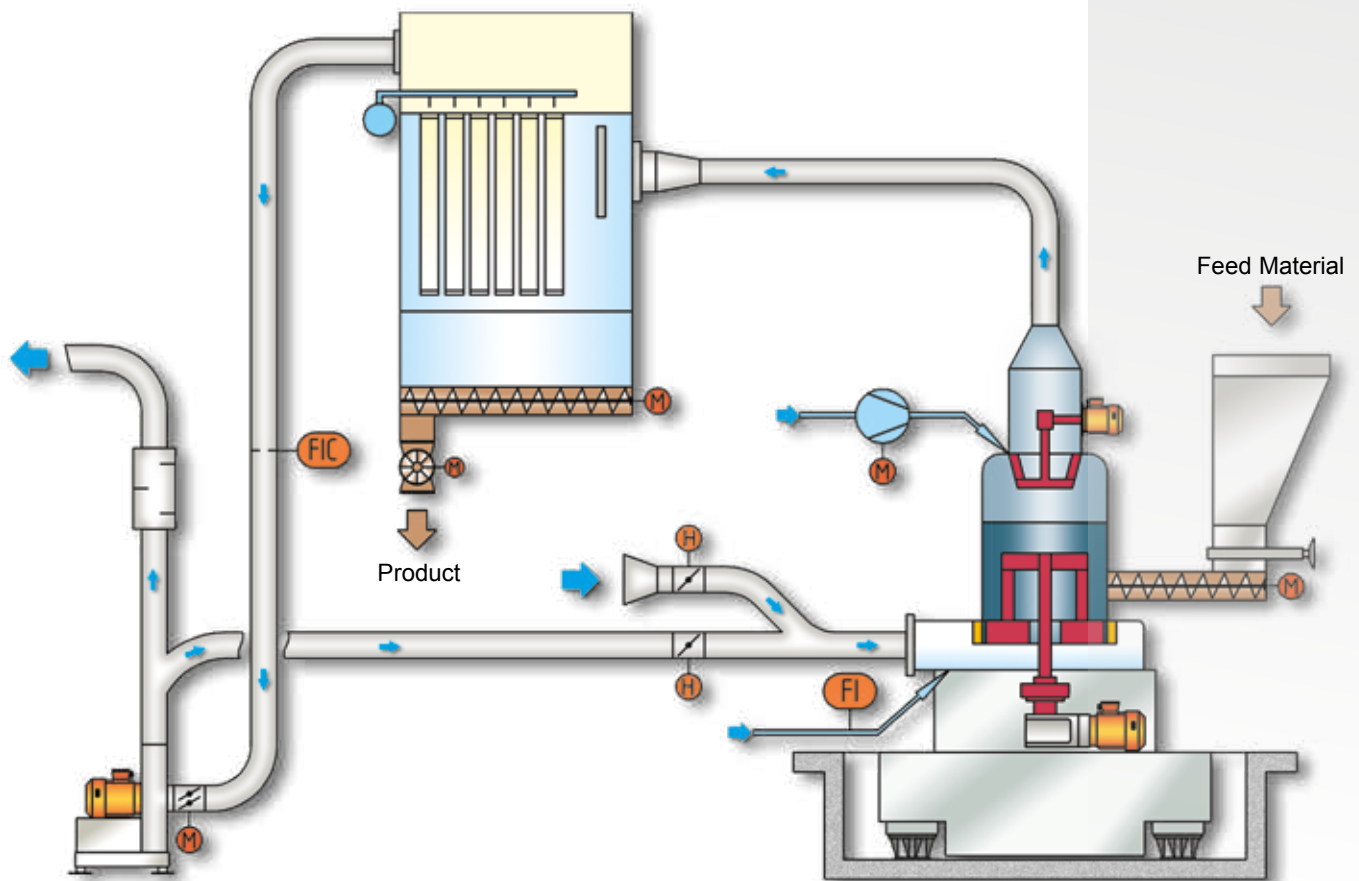
NEA Benefits

- Experience**
 - since 1941 in TiO₂ grinding
 - today, more than 80 TiO₂ grinding systems are in successful operation
- Fineness**
 - mean particle size is $d_{50} = 0.3$ to $0.6 \mu\text{m}$ and top cut 20 ppm = 0.02% > $45 \mu\text{m}$ = 325 mesh
 - highest classifying performance with sharp top cuts by SDR Radial Classifier
 - five pendulums to achieve finest grinds in Pendulum Roller Mill
- Bridging**
 - the superfine white pigment tends to sticking and bridging in the entire grinding system
 - anti-built up features like: rubber lining in critical areas, special flow pattern, acoustic or pneumatic cleaning devices
- Hard running**
 - thin material bed in grinding zone causes hardest grinding operation and leads to cracks and damages in pendulum mills of standard design
 - upper mill housing with vibration isolator
 - lower mill housing in one-piece cast design
 - mill foundation using spring dampers
 - rotor assembly in reinforced TiO₂ design
 - critical mill parts made of high quality steel



Measured with
laser diffraction

Wet sieve analysis:
DIN EN ISO 787-18
0.02% > 45 μm $\hat{=}$ 325 mesh



Mill type	PM	08 U5	12 U5	16 U5	20 U5			30 U5		60 U5*	
Grinding ring DIA	mm	1270	1460	1670	2000			2300		2650	
Air flow rate	m³/min	430	640	940	1200	1380	1570	1800	2340	2800	3500
Discharge rate	t/h	2.0	3.0	4.5	5.8	6.6	7.5	8.6	11.2	13.4	16.8
Mill motor	kW	55	75	110	132	160	160	200	250	250	315

Discharge rates are achieved without adding of grinding aid and valid for top cut 20 ppm = 0.02% > 45 μm.

* not validated

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Mahl- und Sichtsysteme ▪ Grinding and Classifying Systems

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