Fine Air Classifier
CDC

Continuum
Technology

Fine Air Classifier CDC

The properties of powdered materials are determined, among others, of its fineness and its particle size distribution. Often these quantities can not be reliably controlled during the production process. In many cases, the required properties can be achieved by a subsequent classification.

Air Classifiers are used for the classification of dry bulk materials. They are used as an integral part in mills or as separate machines.

The CDC fine air classifier is used when a screening machine is no longer usable because of the desired separation limit. Depending on the particle shape, this is the case at about 50 µm. The fine air classifier CDC makes classification possible below the inherent limitation of screening machines. It combines optimum low cut point with a high feed rate. For both coarse as well as fine particles separation is achieved in an application range of approx. 5 µm - 100 µm (d90).
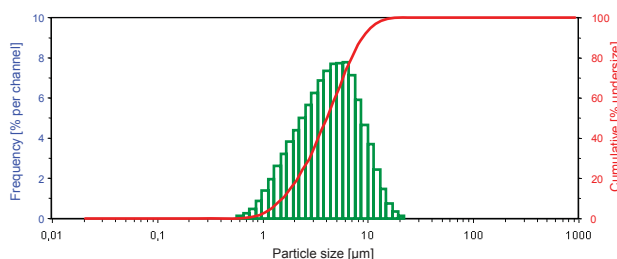
The current generation of the high-performance finisher CDC is the ideal solution especially for large product throughputs.
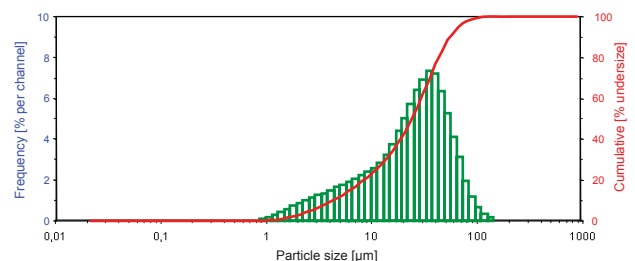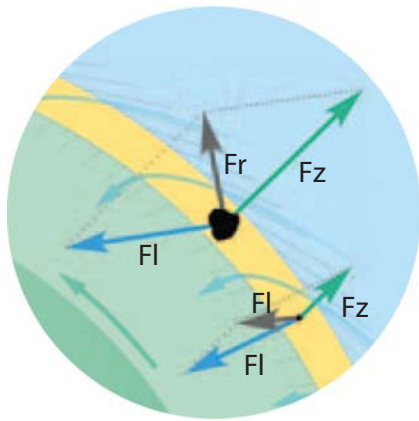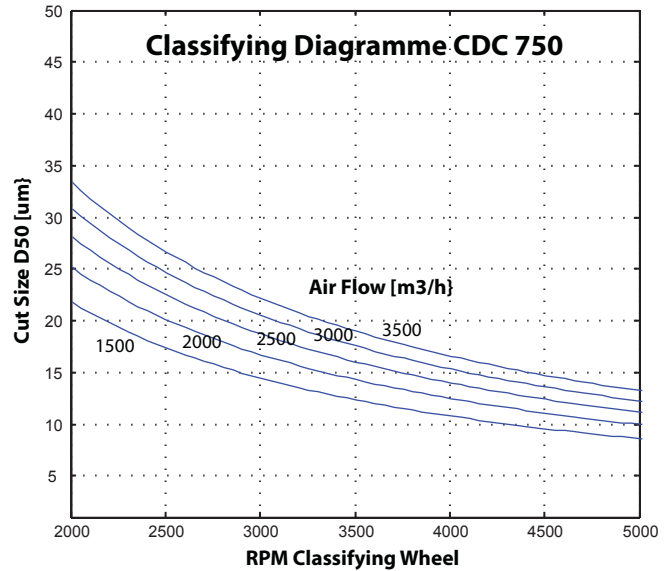
Input Material
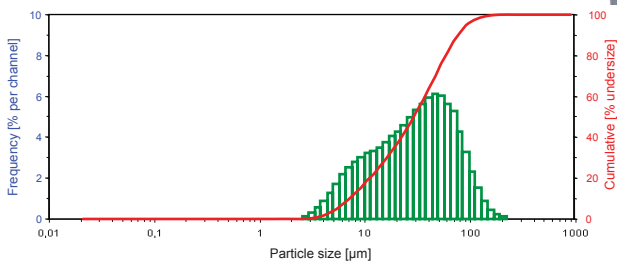
Coarse

Fines

Fine Air Classifier CDC

Fc - Centrifugal Force
Fd - Air Drarg (Resistance)
Fr - Resulting Force

Classifying Diagramme CDC 750

Cut Size D50 [um]

Air Flow [m3/h]

1500   2000   2500   3000   3500
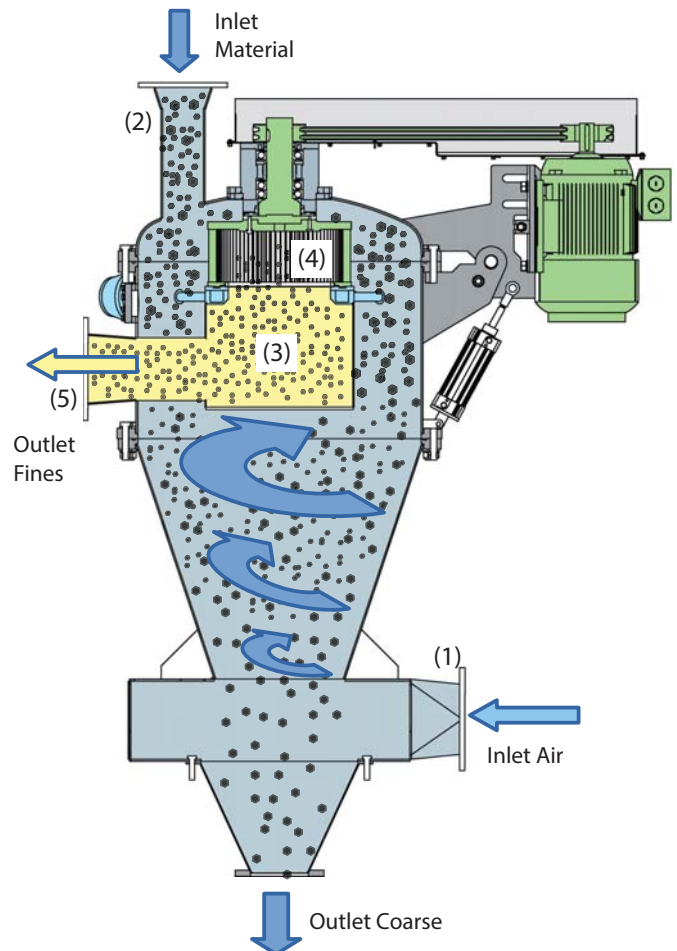
RPM Classifying Wheel

Principle

In the outer peripheral region of the classifying wheel two forces act on one particle. These are on the one hand the drag force, and on the other the centrifugal force. The resultant of these forces determines whether a particle is draged into the classifying wheel or is thrown out of it.

Because of the air moved through the classifying wheel, each particle experiences a drag force parallel to flow's direction. This is due to the flow around the particle. The centrifugal force is caused by the rotation of the classifying wheel. If a particle is located between the blades of the classifying wheel, it is captured and moved along a circular path. The centrifugal force is directed radially outwards.

Functional Description

The visible material enters the classifier pneumatically via the tangential inlet (1) or via the inlet (2) in the upper cover area. The classifying air, passes through the tangential inlet (1) in the lower region of the classifier. The air flows around the classifying wheel (3) from the bottom into a classifying zone around the classifying wheel. As a result of the turbulent flow in the spiral housing, the input material is evenly distributed around the classifying wheel (4).
The classifying wheel determines the cut point (particle size). Which particle size is passed through the classifying wheel can be adjusted by airflow and the classifying wheel RPM. Both parameters can be varied during operation of the classifier. The rejected coarse particles return to the classifying process by air flow in the Classifier. The fine particles passing through the classifying wheel are transported pneumatically through the tangential exit (5) in the cylindrical part of the separator and subsequently separated.

Inlet Material

(2)

(4)

(3)

(5)

Outlet Fines

(1)

Inlet Air

Outlet Coarse
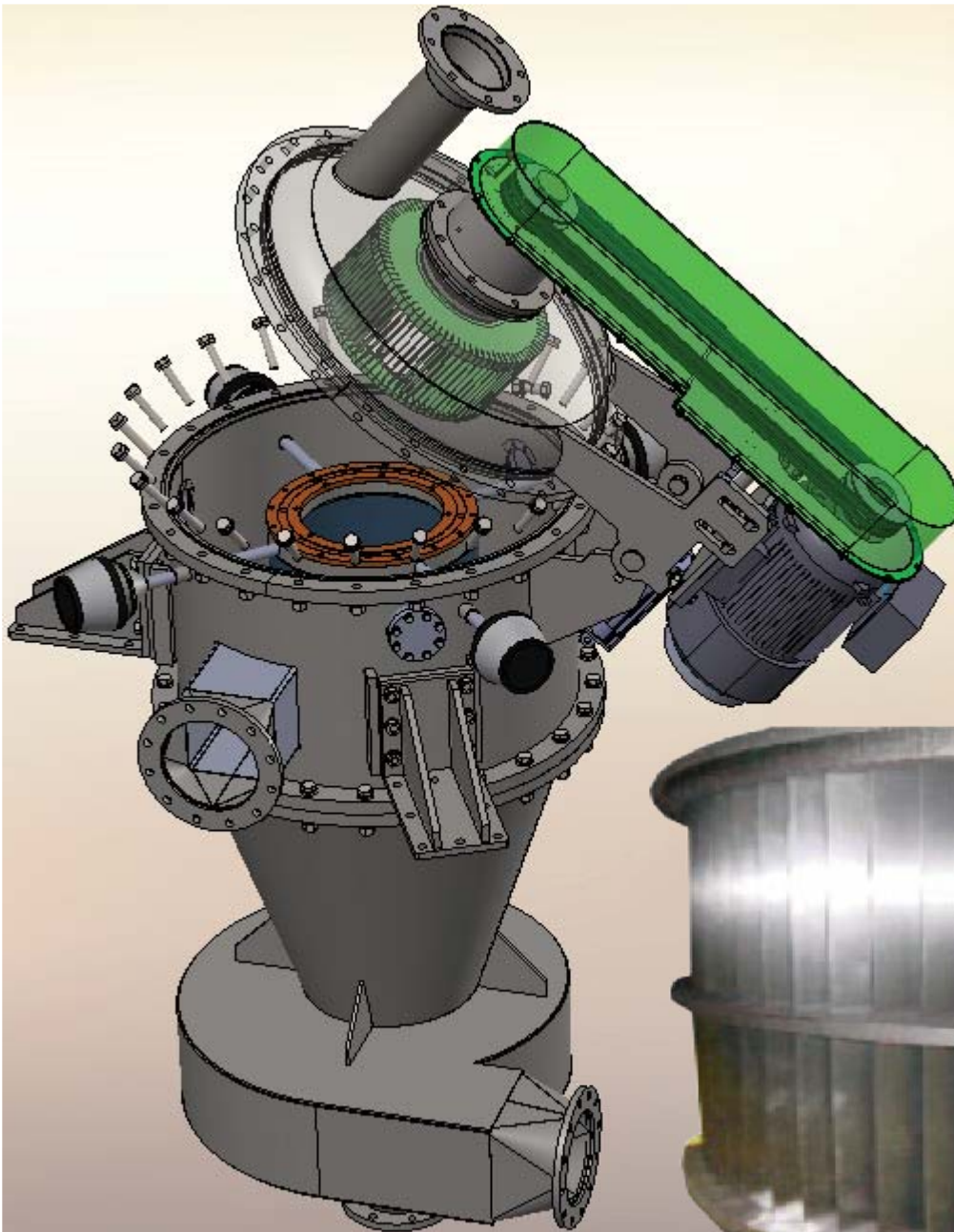
Proven unicycle design in a suspended configuration

Due to the use of single classifying wheel in a suspended arrangement, the following advantages result:

• Symmetrical design for even loading and better performance of the classifying wheel
• Single gap between the separator wheel and the stationary housing,
• Single bearing and drive,
• Best accessibility for cleaning and maintenance by the tiltable upper housing cover

Resulting from the suspended arrangement of the classifying wheel, the air rises from the bottom of the housing, with the input material uniformly distributed in it. This avoids local overloading of the classifying wheel, thus leading to a more uniform separation curve. Ultimately, a finer cut point can be set at lower RPM and a more uniform size distribution of fines.
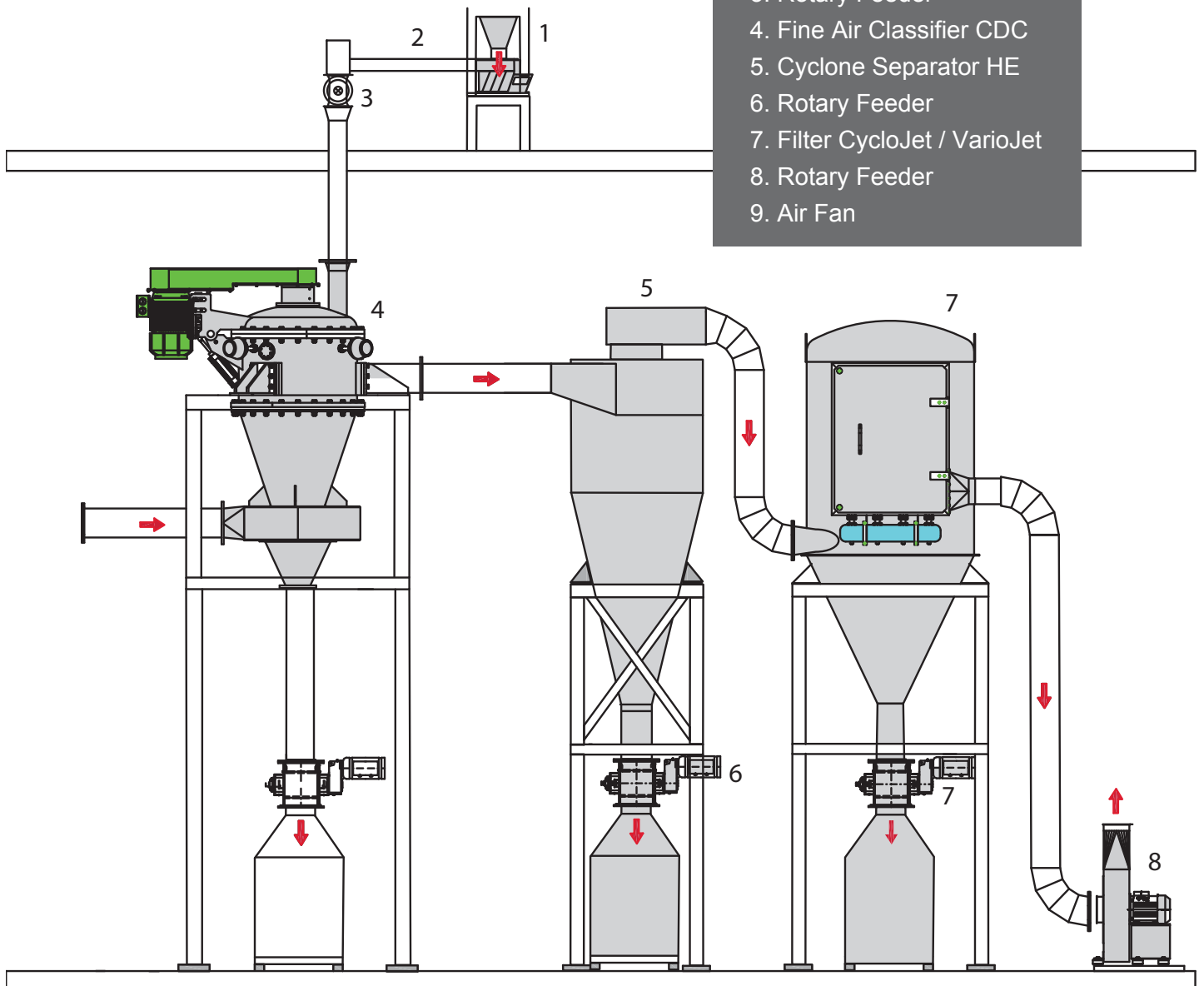
Fine Air Classifier CDC

Turnkey Classifying Solutions

Continuum Technology supplies turnkey solutions. Starting from dosing of input material, through the classification with the subsequent dedusting to the filling of the fine materials, all systems are planned and built individually for the respective requirements.

In the case of a typical installation for the classification of bulk materials, the input material is dosed by means of vibrating dosing device, dosing screw or rotary feeder. After classification in the classifier, fine material is separated from the air stream via a cyclone separator or a bag-house filter.

1. Storage Silo
2. Vibrating Chute
3. Rotary Feeder
4. Fine Air Classifier CDC
5. Cyclone Separator HE
6. Rotary Feeder
7. Filter CycloJet / VarioJet
8. Rotary Feeder
9. Air Fan

Fine Air Classifier CDC

Models

The CDC fine air classifier is available in 5 sizes with installed power between 4 and 75 kW. An exact comparison of the classifying wheel, air volume, classifying RPM allows a direct comparison of the through entire series. Thus results from one fine classifier can be transferred to all the models.
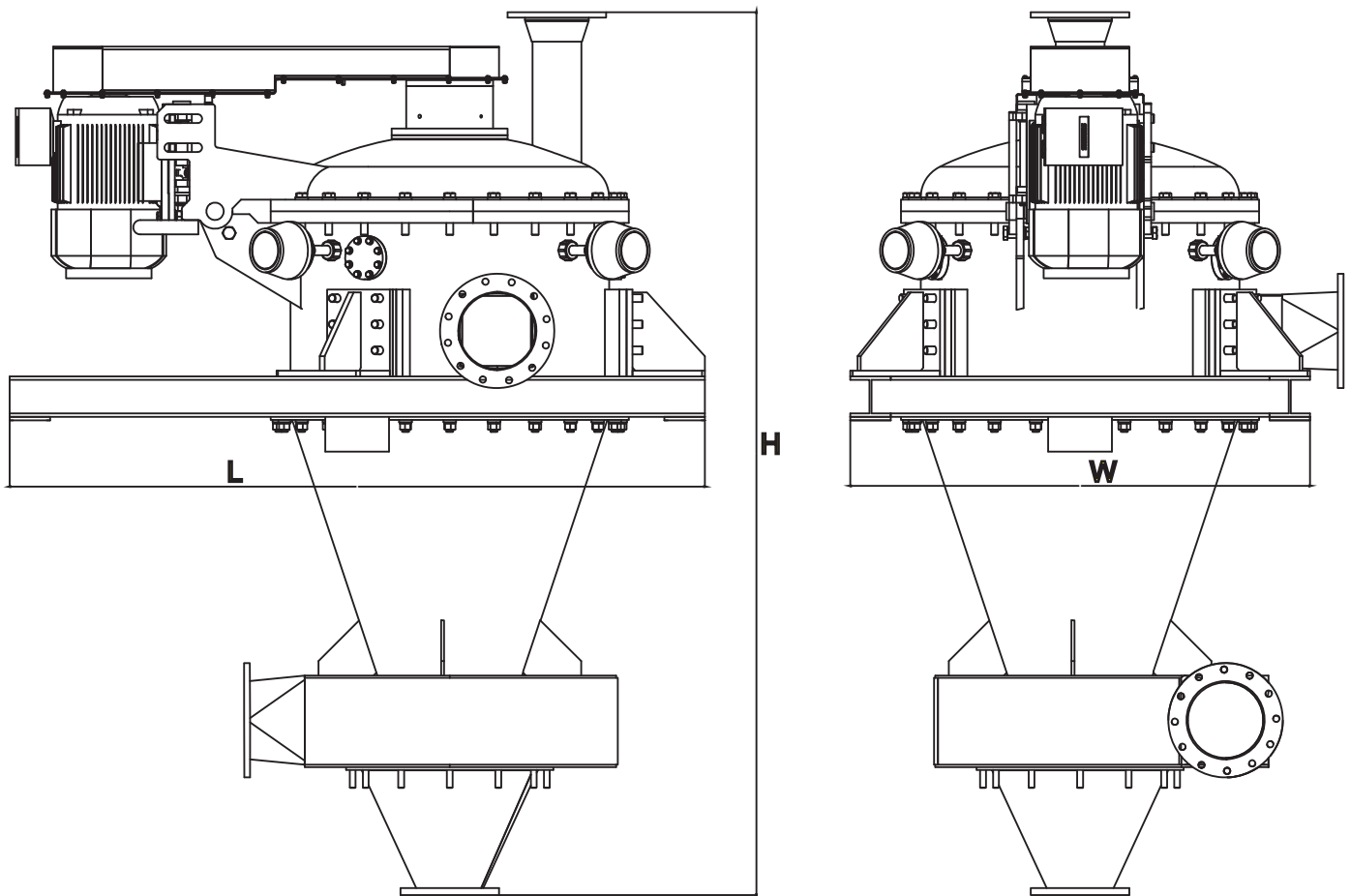
Technical Data

		CDC 400	CDC 600	CDC 750	CDC 1100	CDC 1600
Scale		0,5	0,55	0,68	1	1,45
Diameter Housing	mm	400	600	750	1100	1600
Diameter Class. Wheel	mm	200	300	375	550	800
Max. RPM Class. Wheel	min-1	7200	5100	3600	3000	1700
Power	kW	4	7,5	15	37	75
Air Flow (Class) min.	Nm³/h	450	780	1560	2340	3540
Air Flow (Class) max.	Nm³/h	750	1300	2600	3900	5900
Production Capacity min.	kg/h	50	100	190	290	430
Production Capacity max.	kg/h	600	1200	2400	3600	5400
Cut Size D97	um	3 - 150	3 - 150	4 - 200	5 - 200	5 - 200
Length	mm	950	1400	1780	2500	3700
Width	mm	800	900	1100	1600	2300
Height	mm	1170	1700	2140	3050	4450
Weight	kg	1100	1210	1500	2200	3400

Continuum Technology

Continuum Technology EOOD
Philip Makedonsky 32a
BG-4000 Plovdiv

Telefon: 00359 894 637 601
Fax: 00359 894 637 601
Web: www.continuum-tech.net

Product Range

Grinding - Classification Technology

CCM Classifying Mill

CVM Eccentric Vibration Mill

CJM Fluidized Bed Jet Mill

CIM Impact Mill

CDC Fine Air Classifier

CSC-HDS Ultrafine Air Classifier

Turnkey Solutions for
Production of powdered bulk materials

Filtration Technology

VarioJet Bag-House Filter

CycloJet Cylindric Bag-House Filter

Cyclone and Girotrone Separator

Compact Dedusters

HydroTower Wet Scrubber

VacuumJet Pneumatic Conveyor

Rotary Feeder

Services

Plant Engineering

Consulting

Spare Parts

Modernization - Refurbishing

Technical Centre

Tall Grinding

Laboratory Test

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