

HOSOKAWA  
ALPINE Aktiengesellschaft & Co. OHG  
P.O. Box 10 11 51  
D – 86001 Augsburg, Germany  
Delivery address:  
Peter-Dörfler-Straße 13 – 25  
D – 86199 Augsburg, Germany

Phone.: +49 (0) 821 / 59 06-0  
Fax: +49 (0) 821 / 57 35 78  
E-mail: mail@alpine.hosokawa.com

www.alpinehosokawa.com

Subject to change without notice.  
All information in this brochure is purely  
informative and non-binding. Our quotations are  
authoritative with regard to orders.

## ALPINE CLASSIFIER MILLS ZIRKOPLEX® ZPS AND POWDERPLEX® APP



**HOSOKAWA**  
**ALPINE Aktiengesellschaft & Co. OHG**

Hosokawa Alpine is a member of the Hosokawa Micron Group, responding to global needs through emphasis on materials science and engineering. The Group is an international provider of equipment and technology for powder and particle processing, plastics processing and confectionery products. The Group maintains facilities for research, engineering, manufacturing and service in each of the world's major industrial markets.

© Hosokawa Alpine 2004. Printed in Germany.



**HOSOKAWA ALPINE**

PROCESS TECHNOLOGIES FOR TOMORROW<sup>SM</sup>



*Hosokawa Alpine has been in business for over 100 years. Regardless of the field, i.e. blown film processing or powder & particle processing, we are traditional trendsetters on the market. The driving force behind refining our technologies is the experience we gain and the challenges we face as market leaders*

## WE ARE YOUR COMPETENT PARTNER

### BLOWN FILM PROCESSING

As a specialist for film blowing lines to manufacture thin plastic film, Hosokawa Alpine ranks among the world's foremost suppliers in this market segment. The vast fund of know-how, the high quality standards, the continuous innovation and high degree of reliability are all reasons for the constant growth of this business division.

### POWDER & PARTICLE PROCESSING

Formed in 1898, Hosokawa Alpine's range includes the development, design and manufacture of components and turnkey systems to produce powders, granules and bulk materials for the chemical, pharmaceutical, food, minerals, metals and recycling industries. Whether the task is comminution, classification, dust removal, handling, metering, weighing or packing, you will always find Hosokawa Alpine to be a competent and innovative partner.

### DIVISIONAL STRUCTURE

The name ALPINE stands for competence in all areas of comminution technology. The long years of close cooperation between our engineers and the development departments of our customers have made us leading specialists for powder and particle processing technology around the world. Because our aim is to offer our customers the very best in professional and accomplished advice tailored to their specific branch of industry, our powder and particle processing division is divided into five subdivisions:

#### - PHARMA & FOOD

The manufacture of powdery substances for the pharmaceutical industry is a job for specialists. Hosokawa Alpine conforms with international pharma standards and supplies a wide range of products and performance, including special processes for the food industry. Whatever method of size reduction is used, we are the specialists.

#### - CHEMICALS

The range of chemical products is just as wide and diverse as are the different demands on the properties of pigments or powders. We supply process-technological solutions for the chemical industry as a single-source partner. Our comprehensive range of products means that we are able to meet a vast number of different requirements. We also offer competent advice on solutions for basic chemical products and auxiliary products, as well as for toners, paints, pigments, herbicides or fertilisers.

#### - MINERALS & METALS

We supply complete dry and wet processes with state-of-the-art mills and classifiers for processing mineral raw materials. Our machines and systems for fillers, ceramic raw materials, metallic compounds and alloys all meet the high demands set by our customers. We are not just manufacturers, however, but also competent partners for the engineering and design of complete turnkey systems.

#### - RECYCLING & GRANULATORS

We design, build and deliver complete granulator systems to include all necessary system components. Whether the feed material is injection mouldings, sprues, film webs or film edge trims, our granulators are designed for even the most difficult cutting tasks. In addition, we also supply in-line recycling solutions for rubber or cable which are tailored to the individual requirements.

#### - SERVICE

Our service division gives support during the entire lifetime of any Hosokawa Alpine system or machine. Our extensive range of services includes spare parts supply, maintenance, inspection, servicing, repairs, general overhauls, system upgrading, and training. A fairly recent addition to our portfolio of services is a range of pre-owned ALPINE machines.

No matter what part of the world you are in or what your processing challenge is, Hosokawa Alpine is never far away with the best solutions and support. Our range of services includes project management, installation, commissioning, training, maintenance and system upgrades.



EVERYTHING FROM  
ONE SINGLE  
RESPONSIBLE SOURCE.



As the name implies, a classifier mill consists of a mechanical impact mill and an air classifier. With these machines, the end-product fineness is dictated by the air classifier, independent of the conditions in the grinding zone, meaning that the product quality is extremely constant. The simple method of adjusting the fineness as a function of the classifier speed makes the classifier mill extremely flexible in application. The Zirkoplex ZPS classifier mill works to this principle.

If a high degree of flexibility is not required, the classifying wheel can co-rotate with the grinding disc, without having to accept any trade-offs in product quality. This describes the Powderplex APP machine,

which is somewhat simpler in design than the ZPS because only one drive is necessary.

Alpine has created new standards with their Zirkoplex ZPS and Powderplex APP classifier mills in terms of achievable absolute fineness, sharp top-size limitation, energy utilisation and wear-resistance.

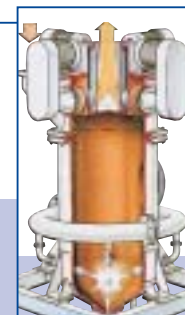


### CLASSIFIER-MILL ZIRKOPLEX® ZPS

The flexible classifier mill for high fineness values, cool grinding and varying production parameters. Impact beater mill with a single- or multi-wheel Turboplex classifier integrated into the top section for exact top-size limitation.

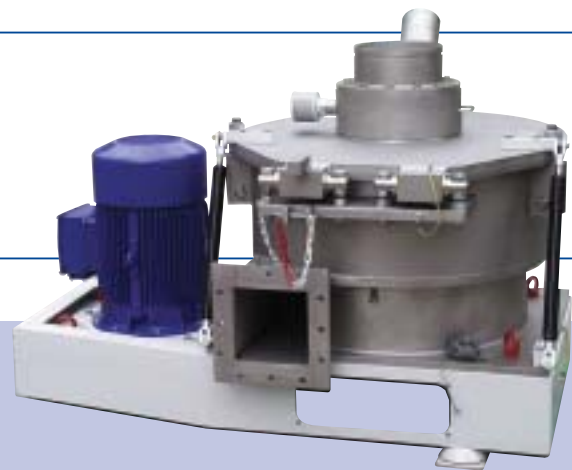
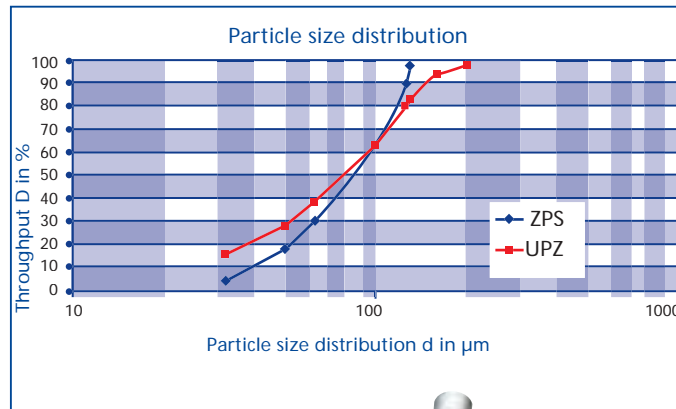
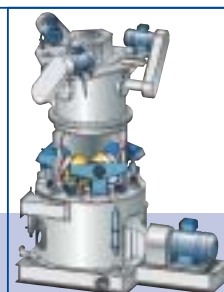
### FLUIDISED BED OPPOSED JET MILL AFG OR TTG

Classifier mill for manufacturing ultra-pure powders with steep particle size distributions and a sharp top-size limitation in the range between < 5 and 200 µm.  
- See separate brochure.



### TABLE ROLLER MILL AWM WITH INTEGRATED CLASSIFIER TOP SECTION

For an end-product fineness of between approx. 10 and 100 µm. Preferred fineness range  $d_{97} = 50 \mu\text{m}$ .  
- See separate brochure.



### CLASSIFIER MILL POWDERPLEX® APP

The simple and robust classifier mill for high volumes of medium fineness. Single-rotor classifier mill for a powder fineness between  $d_{97} = 20$  and 200 µm with an integrated air classifier designed for a high precision of cut for fine products without spatter grain.

### OPPOSED JET MILLING IN FLUIDISED BED

With this concept, the installation table, metering equipment, grinding air and bearing rinsing elements, drive, product collection filter, fan and electric control unit can all be used jointly for several processes.



### COMBINED IMPACT GRINDING/CLASSIFICATION



### SPIRAL JET MILL



### CONTINUOUS IMPACT GRINDING



### CLASSIFICATION



### ALPINE MULTI-PROCESSING SYSTEM ALLOWS 5 PROCESSES (ALSO SUITABLE FOR CIP/SIP)

It only takes a few minutes to convert the machine to exactly that process which the respective product calls for.

- A) Combined impact grinding/classifying (ZPS) for materials to a Mohs' hardness of 3.5 and a fineness between 8 and 120 µm.
- B) Opposed jet milling in fluidised bed (AFG) for materials to a Mohs' hardness of 10 and a fineness between 2 and 40 µm.
- C) Continuous impact grinding (UPZ) for materials to a Mohs' hardness of 3 and a fineness between 10 and 1500 µm (dependent on design).
- D) Spiral jet mill (AS) for a fineness between 5 and 30 µm.
- E) Ultrafine classifying (ATP) for materials to a Mohs' hardness of 10 and a fineness between 2 and 120 µm.

### Possible Combinations

	UPZ	ZPS	AS	AFG	ATP
	100	50	100	100	50
	-	70	140	140	70
	160	100	200	200	100

Zirkoplex Classifier Mill	Type	ZPS	50	70
End-product fineness	$d_{97} = [\mu\text{m}]$		8-100	8-100
Scale-up factor	F = approx.		-	0,15
Beater unit Ø	[mm]		100	140
Max. mill speed max.	[rpm]		22000	16000
Mill drive	[kW]		1	2,2

50 ZPS PRACTICAL EXAMPLES	POWDER FINENESS % < µm*		FEED kg/h
Minerals	Measured point of particle size distribution		
Limestone	97% < 8	50% < 3.5	2 - 12.5
Limestone (soft, crystalline)	97% < 15	50% < 4.5	8 - 10
	97% < 120	50% < 9	30
Talc	97% < 12	50% < 7.5	10 - 15
Graphite	97% < 70	50% < 22	8 - 10

Chemicals	POWDER FINENESS % < µm*		FEED kg/h
Aluminium hydroxide	97% < 22	50% < 9	30 - 35
Lead sulphate	97% < 8	50% < 2.6	10 - 15
Calcium stearate	97% < 11	50% < 4.7	10 - 15
Copper oxide chloride	97% < 12	50% < 4.8	15 - 20
Phenolic resin	97% < 60	50% < 2.4	20 - 30
Tricalcium phosphate	97% < 9	50% < 3.2	5 - 10
Zinc chromate	97% < 4	50% < 1.6	3 - 5
Zinc phosphate	97% < 12	50% < 5.9	15 - 20

Foodstuffs	POWDER FINENESS % < µm*		FEED kg/h
Lactose	97% < 25	50% < 8	20 - 25
Starch derivatives	97% < 110	50% < 50	20 - 25
Sugar	97% < 15	50% < 5.2	3 - 5

\* All values are non-binding reference values



Classifier mill for fine grinding with integrated classifier for soft materials to a Mohs' hardness of 3.5. Spatter-grain-free end products with steep particle size distributions at precise top-size limitation



### PRINCIPLE OF OPERATION

The size-reduction elements comprise an impact beater unit plus a stationary triangular-ribbed grinding track that surrounds the grinding chamber. The impact beater unit is designed such that the grinding process is extremely gentle and energy-saving. The impact beaters themselves are exchangeable. The grinding track is in segmented design. A Turboplex ultrafine classifier with one or more horizontally arranged classifying wheels is integrated into the top section of the mill. The feed product, conveyed to the machine by a system-sided feed metering unit, enters at the filling socket and is intercepted by the impact beaters of the beater disc. The combined action of the beaters and the grinding track serves to comminute the product, which is then transported via the

classifier to the product discharge. The air introduced into the machine at the air inlet socket cools, transports and also classifies the feed product in the integrated classifier. Dependent on the problem specification, the feed product can also be introduced into the machine entrained in the air. In this case, the intake socket is either blanked off or is not available at all. The fines, extracted in accordance with the cut point set at the classifier, are discharged via the fines discharge. The end product must be separated from the air in a downstream, system-sided collection device. Particles that are too coarse are rejected by the classifying wheel and are commi-

nuted by the beater unit until such time as they can pass through the classifying wheel and thus correspond to the required fineness as specified by the classifying wheel speed. The feed product enters the classifying chamber from the side via a rotary valve, whereby any particles which already display the end-product fineness are discharged immediately by the Turboplex ultrafine classifier, without having to pass through the grinding unit. The air is supplied to the mill by a socket on the side of the machine.

### APPLICATIONS

Zirkoplex classifier mills are universal in use for materials to a Mohs' hardness of approx. 3, when the requirements call for extremely high end-product fineness values at the lowest possible energy consumption.



750 ZPS

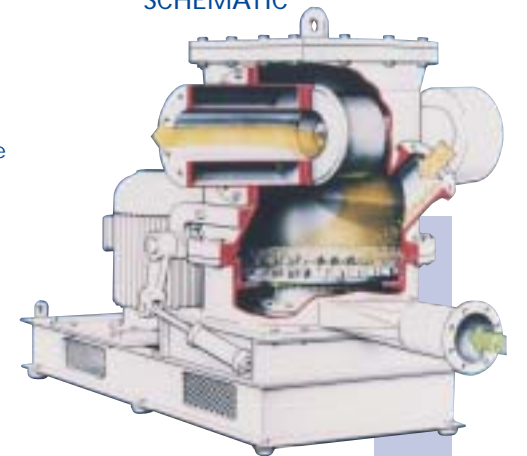
### FEATURES

- Optimum accessibility.
- Easy cleaning; a big plus if the product is changed often.
- Designed with sticky products in mind that tend to deposit.
- Special fluidisation equipment at critical points.
- Deposit-free and gentle processing of pigments, wax, resins, powder coatings, etc.
- High air flow rate = cool grinding.
- Excellent precision of cut.
- Stable classifying characteristics: once set, the classifying fineness remains constant.

### PRODUCT EXAMPLES

- Synthetic resins (epoxy, phenolic, acrylic, polyester resins), wax
- Plastics such as Teflon half-polymers
- Precipitated products such as SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, aluminium hydrate
- Sugar, lactose, cocoa blends
- Thickening agents, gelatine, alginate
- Algae
- Animal feed
- Pigments
- Protein shifting in flours
- Phosphate
- PVC

### SCHEMATIC



SHIPPING A 1000 ZPS

Zirkoplex Classifier Mill Type ZPS	100	140	200	200/4	315	400	500	630	750	1000
Scale-up factor F = approx.	0.33	0.5	1	4.2	2	3	4.2	6.5	9	13
Beater unit Ø [mm]	200	280	400	1000	630	800	1000	1250	1530	2000
Max. mill speed [rpm]	11200	8400	5600	2250	3350	2800	2250	1800	1460	1120
Mill drive [kW]	3/ 4	7.5/ 11	11/ 15	55/ 75	22/ 30	45/ 55	55/ 75	110/ 132	160/ 200	250/ 315
End-product fineness d <sub>97</sub> = [µm]	8-100	8-100	8-120	8-120	8-120	8-120	8-120	10-180	10-200	15-200

Turboplex Type ATP	100	140	200	4 x 200	315	400	500	630	750	1000
Max. classifying wheel speed [min <sup>-1</sup> ]	11200	8500	6000	6000	4000	3000	2250	2000	1600	1200
Classifier drive [kW]	1.5/2.2/ 3/4	2.2/3/ 4	4/5.5/ 7.5	4 x 5.5/ 7.5	5.5/ 7.5	7.5/ 11	15/ 22	22/ 30	30/ 37	45
Total max. gas flow rate [m <sup>3</sup> /h]	300	500	1200	5000	3000	4800	9000	12000	18000	25000

# POWDER AND PARTICLE PROCESSING

## ZPS SPECIAL DESIGNS



The smooth design characterised by its lack of dead zones simplifies thorough emptying, cleaning and sterilisation



### PHARMA DESIGN/GMP DESIGN

The system can be dismantled into its component parts, and all product-contact components can be sterilised in an autoclave.

#### FEATURES:

- Product-contact parts in AISI 316L, surface finish Ra = 0.4 - 0.8 µm
- Other system parts in AISI 304, surface finish Ra = 0.8 - 1.2 µm
- Stainless steel control cabinet in special design suitable for wet cleaning
- Motors encased in polished stainless steel sheet
- Seals made of silicon, EPDM, Chemraz®

- Operation in cleanrooms: absolute filter for filter exhaust air, sterile filter with polished stainless steel housing for suction air

### EXPLOSION PROTECTION

Special system safety measures must be taken if the products being processed are potentially explosive. The options are: pressure relief, explosion suppression or pressure-shock-proof design. Our preference is to manufacture the relevant components in pressure-shock-proof design, because in this way, the system can be set up in any desired

configuration and the maintenance costs can be minimised. With this concept, the machines, cyclones, filters and ductings are all in pressure-shock-proof design to 10 bar overpressure. All the relevant slide and gate valves are not only pressure-shock-proof, but are also flame-propagation-proof, making it possible to reliably contain the maximum explosion pressure that can occur in the system.



ATEX

All ZPS sizes are certified: EC Design Test Certificate No. IBExU03ATEX 1152 X and marked EX II 1(I) D / 2 (o) DG c IIC T5.

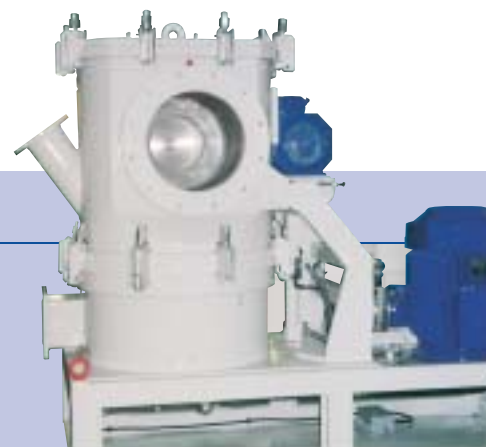
100 ZPS IN PHARMA DESIGN



200 ZPS IN PHARMA DESIGN ALSO SUITABLE FOR WIP, CIP AND SIP



PRESSURE-SHOCK-PROOF TO 10 BAR (G)



GRINDING TRACK WITH CERAMIC WEAR PROTECTION



### ENHANCED WEAR PROTECTION

The use of oxide ceramic material for wear protection of the product-contact surfaces ensures a long service life of the machine.



### CONTROL AND VISUALISATION

The importance of system control and visualisation is constantly increasing. Nowadays, more and more control panels with visualisation possibilities are being used. The individual process steps, flowcharts and statuses can all be visualised optimally with monitors. Individual operating statuses can be retrieved at any time. All error messages are registered and can be printed out.

### MULTI-WHEEL CLASSIFIER HEAD

Alpine has succeeded in satisfying the requirements in dry production operations for high throughputs at maximum end-product fineness values by employing several equi-sized turbo classifying wheels. This multi-wheel concept was applied by Alpine for the first time with the Turboplex classifier, thus making it possible to achieve superfine products (especially those products in the 3 - 6 µm range) with an extremely high fines yield at maximum precision of cut in an extremely cost-effective manner with only one single classifier.

ZPS WITH MULTI-WHEEL CLASSIFIER HEAD





Single-rotor classifier mill for powder fineness values between  $d_{97} = 20$  and  $200 \mu\text{m}$  with an integrated air classifier designed for a high precision of cut for fine product without spatter grain

### PRINCIPLE OF OPERATION

Because the classifying wheel of the Powderplex mill sits on and co-rotates with the grinding disc, only one rotor, one bearing unit and one drive are necessary with this machine. Dependent on the required product fineness, the APP is equipped with a classifying wheel designed for coarse, medium or fine separations to match the order. The classifying wheel is connected rigidly with the grinding disc by means of a spacer. Fed by an air-sealed feed unit, the feed product is introduced to the machine via the feed port at the feed socket onto the wear plate of the beater disc, where it is uniformly distributed, intercepted by the impact beaters and catapulted against the grinding track. Comminution is a result of the product impacting against the impact beaters and against the grinding track. After entering the machine via the socket, the working air flows between the beater disc and the grinding track into the grinding chamber. The comminuted product is conveyed out of the grinding zone by the air flow, from where it is transported along the outside of the deflection cone and upwards before being deflected to the classifying wheel. The working air extracts the fines portion from the product in the classifying zone and conveys it through the vanes of the classifying wheel to the fines discharge, from where it exits the machine. The coarse material is rejected by the classifying wheel and gravitates downwards for renewed comminution. The pro-

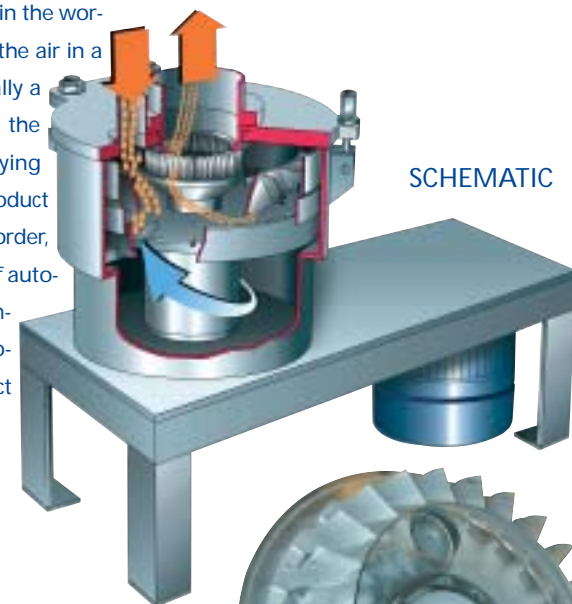
duct that is discharged entrained in the working air must be separated from the air in a downstream collection unit (usually a filter). A narrow gap between the labyrinth seal and the classifying wheel prevents unclassified product from migrating into the fines. To order, this gap can be rinsed by means of automatically intaken air. Rinsing (compressed) air at the connection protects the bearings from product ingress.

### FEATURES

- Single-rotor classifier mill of simple overall design.
- Grinding disc with beaters of hardened stainless steel; can be removed easily from above.
- Height-adjustable grinding track for long service life.
- Sharply separating, integrated air classifier for fines without spatter grain.



500 APP



SCHEMATIC



APP VANE RING

### DESIGNS

- Pressureless/pressure-shock-proof to 10 bar (g)
- Mild steel/stainless steel
- Wear protected (aluminium oxide, polyurethane)

Powderplex Type APP		160	200	315	400	500	630	750
Scale-up factor approx.	F =	1	1.75	3.1	4.6	6.6	9.7	13
Drive power	[kW]	11	18.5	30	55	75	110	160
Grinding disc Ø	[mm]	320	448	630	800	1000	1260	1500
Max. speed	[rpm]	7000	5000	3600	2800	2250	1800	1460
Max. total air volume	[m <sup>3</sup> /h]	750	1500	3000	4800	7500	12000	18000
End-product fineness $d_{97}$	[µm]	13	15	19	20	20	20	20

### APPLICATIONS

Powderplex classifier mills are universal in use for materials to a Mohs' hardness of approx. 3.5, especially when the requirement is for a machine which once set to a certain fineness, is capable of manufacturing an end product over a long period of time to exactly this end fineness.

### PRODUCT EXAMPLES

- Chemicals, base materials, laboratory and industrial chemicals
- Chemical intermediates
- Inorganic salts
- Powder coatings
- Dyes
- Resins, adhesives
- Minerals (to Mohs' hardness 3, quartz-free)
- Fertilisers
- Foodstuffs and luxury foods
- Animal feed

### SYSTEM EXAMPLE

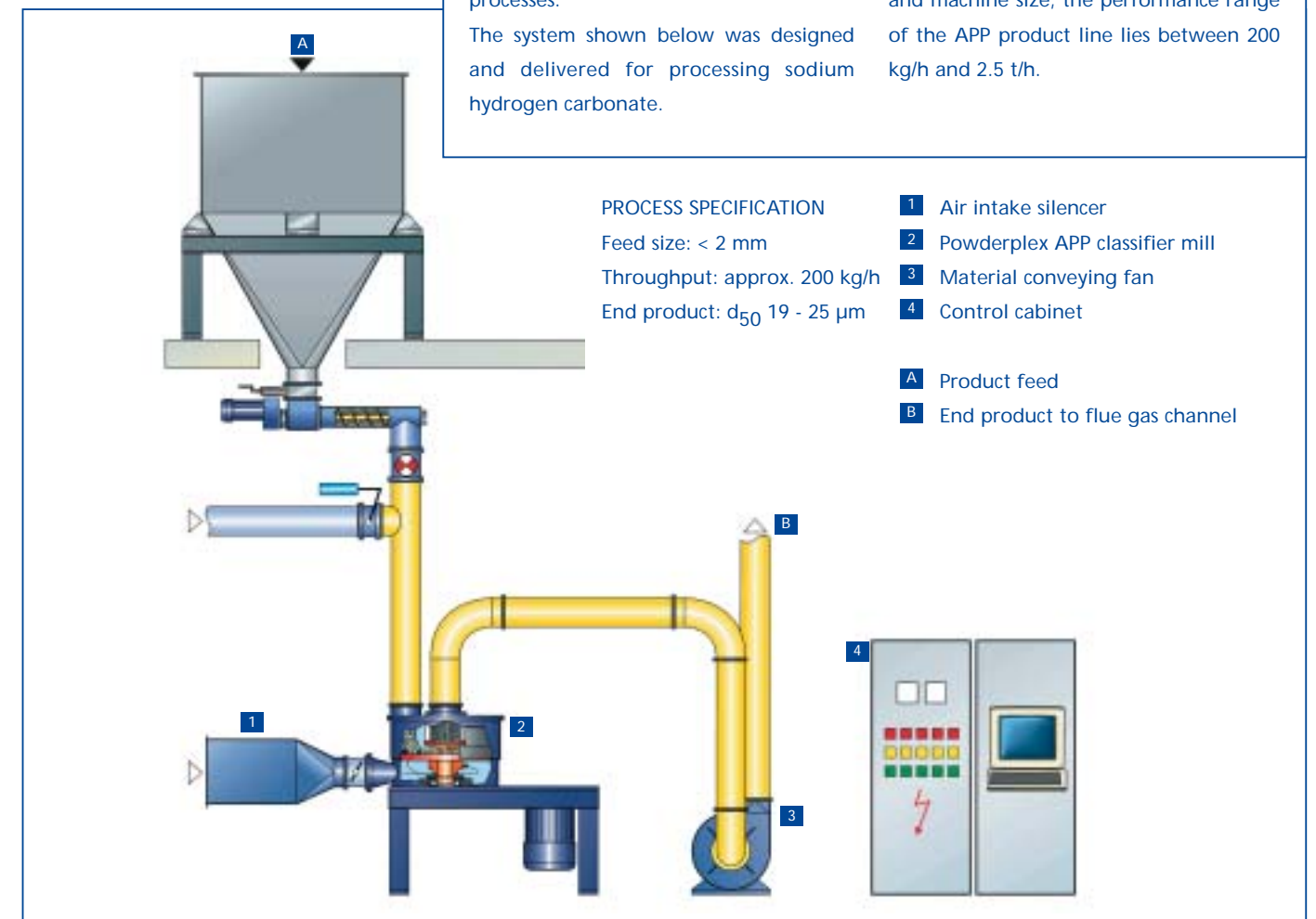
#### PROCESSING OF SODIUM HYDROGEN CARBONATE (SODIUM BICARBONATE)

Sodium hydrogen carbonate is used in baking powder, pharmaceutical products, fire extinguishers and for neutralisation processes in the chemical and pharmaceutical industries. It is also used frequently at a particle size of  $d_{50} 19 - 25 \mu\text{m}$  to neutralise the acidic constituents in flue-gas desulphurisation processes.

The system shown below was designed and delivered for processing sodium hydrogen carbonate.

A Powderplex 160 APP classifier mill was chosen to meet the requirements. This machine delivers a steep particle size distribution at simultaneously precise top-size limitation. The modular design ensures ease of accessibility for cleaning and maintenance.

Dependent on the end-product fineness and machine size, the performance range of the APP product line lies between 200 kg/h and 2.5 t/h.



### PROCESS SPECIFICATION

- Feed size: < 2 mm
- Throughput: approx. 200 kg/h
- End product:  $d_{50} 19 - 25 \mu\text{m}$

- 1 Air intake silencer
  - 2 Powderplex APP classifier mill
  - 3 Material conveying fan
  - 4 Control cabinet
- A Product feed  
B End product to flue gas channel

# POWDER AND PARTICLE PROCESSING

## SYSTEM EXAMPLE: POTATO STARCH AND POTATO PROTEIN



As their most important ingredient, potatoes generally contain an average of 15% starch. Potato starch is the polysaccharide stored in this tuberous plant



Photo: Agricultural Chamber of Westphalia-Lippe

### PROCESSING POTATO STARCH AND POTATO PROTEIN

Around 60% of the applications for potato starch are to be found on the technical sector, e.g. in the paper, textile and film industries, as well as for plastic film, detergents and adhesives. The foodstuffs and pharmaceuticals industries account for the remaining 40%:

- in baby food;
- in soups, sauces and dried vegetables;
- as a basis for powder, filler, and splitting agents in the manufacture of tablets, etc.

Another application area is the addition of potato protein to the milk used for rearing calves. The potato protein is recovered from the starch by wet processing. After drying, the protein is processed to an end-product fineness of  $99.5\% < 75 \mu\text{m}$ . Alpine's Zirkoplex ZPS classifier mill has proved to be ideal for this task. This machine is not only used for processing the potato starch, whereby an end product fineness of  $99.5\% < 150 \mu\text{m}$  is required, but also for the above-

mentioned protein. In view of the fact that potato starch and potato protein are organic products, suitable explosion-protection measures must be taken.

## SYSTEM EXAMPLE: PHOSPHATE



The application area for the different kinds of phosphates is extremely wide and varied.

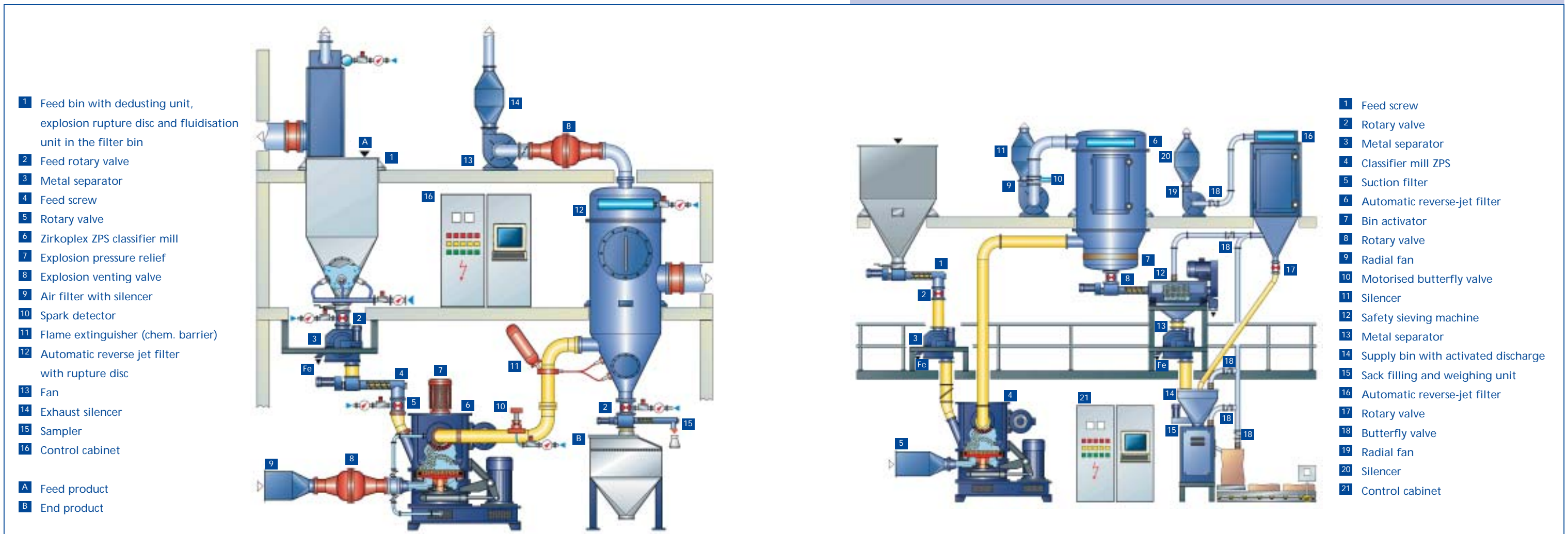


### PHOSPHATE PROCESSING

Although phosphate is mainly used in fertilisers, it is also employed as an additive in the production of adhesives, plant protectors, plastics, foodstuffs, medicines and cosmetics. Besides the flexibility of the manufacturing process itself, the vast range of applications calls for versatile processing systems that can deliver the desired particle size distribution from the

previously dried feed material. For many years, Hosokawa Alpine has been using the Zirkoplex classifier mill ZPS for this task. Thanks to the integrated classifier, this machine can be set to the fineness that is required in each individual case and is thus universal in use.

The flowchart below shows a schematic of such a grinding-classifying system. The system layout bases on the following specifications:  
 Feed material: ex-dryer with a moisture content of 3.5% H<sub>2</sub>O  
 Feed size: < 4 mm  
 Desired end product:  $d_{97} 10 - 45 \mu\text{m}$   
 System throughput: approx. 1300 kg/h at 45  $\mu\text{m}$   
 Machine size used: 630 ZPS





*Subsequent to spray drying, the PVC (E-PVC) is discharged as a powder. The most important applications for E-PVC are plastisols and calendered articles, sections, floor coverings, wall coverings, coated materials and sealing compounds.*

### ZPS CLASSIFIER MILL FOR PROCESSING E-PVC

E-PVC is required as an end product at a fineness value of  $< 63 \mu\text{m}$  and  $< 40 \mu\text{m}$  with the lowest possible residue. But because these requirements cannot be met by "spraying" alone, grinding and classifying technology is employed in addition.

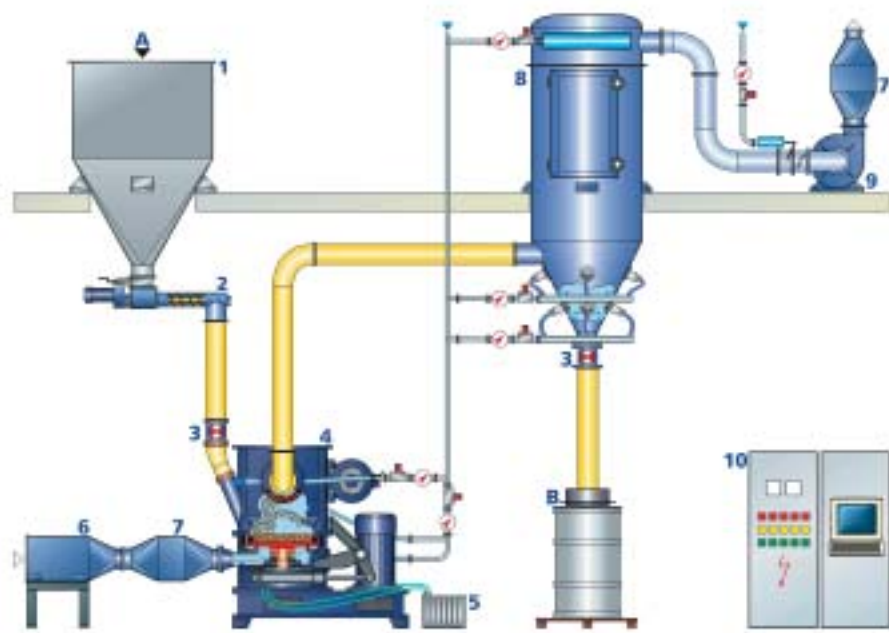
The flowchart shows a specially designed system for the following feed/end-product fineness: Feed material with spray-quality fineness of approx.  $90\% < 63 \mu\text{m}$ .

### SYSTEM END-PRODUCT PERFORMANCE

- Fineness 0.1%  $> 63 \mu\text{m}$  approx. 1600 kg/h
- Fineness 1%  $> 40 \mu\text{m}$  approx. 1200 kg/h

The grinding and classifying process is accomplished with a Zirkoplex 630 ZPS classifier mill. The classifier is integrated into the top section of the mill. The machine is equipped with special fluidisation equipment at all critical points, a measure which reliably prevents any coating formation.

Zirkoplex classifier mills are absolutely ideal for these applications, because they offer optimum accessibility, easy cleaning, cool grinding and an excellent precision of cut.



- 1 Feed bin
- 2 Feed metering unit
- 3 Rotary valve
- 4 Zirkoplex ZPS classifier mill
- 5 Hydraulic pump
- 6 Air intake filter
- 7 Suction/exhaust silencer
- 8 Automatic reverse jet filter with fluidising element
- 9 Fan
- 10 Control cabinet
- A Feed product
- B End product

### APPLICATION TESTING CENTRE

The design of a grinding and classification system is normally based on results from a programme of trials conducted in the HOSOKAWA ALPINE Test Centre. The trials can be complex and time consuming and can include evaluation of a wide range of machine options. This way, customers can be assured that all process options have been considered and that the system offered represents the optimum solution.

Our test centre is extensively equipped with a wide range of different grinding and classification systems, available both on a laboratory and production scale. The test facility is supported by a modern testing laboratory that includes a wide range of analytical equipment enabling accurate measurement of particle size, particle shape, density, etc.

Skilled and vastly experienced Alpine Engineers conduct the trials, recording all operating data that enables ongoing discussions with the customer during the trial. Upon completion of the trial a comprehensive test report is prepared which can then be used for system design and as the basis for a performance guarantee.

It is essential that test facilities are kept at the leading edge of technology if optimum baseline data is to be provided for system design. Our range of machines and systems is continuously upgraded and is extended by new developments.

ALPINE TESTING CENTRE IN AUGSBURG



ALPINE LABORATORY - SCANNING ELECTRON MICROSCOPE



ALPINE LABORATORY - AIR JET SIEVE 200 LS-N