



# POWDER COATING: GRINDING COMPACTING & GRANULATING

*Minimum cleaning times, energy-saving processes*



**HOSOKAWA ALPINE**

Process technologies for tomorrow.

*Typical powder coating products*

- » **EPOXY RESIN POWDER COATING**
- » **POLYURETHANE POWDER COATING**
- » **POLYESTER POWDER COATING** *(TGIC and TGIC-free)*
- » **HYBRID POWDER COATING**
- » **ACRYLIC POWDER COATING**



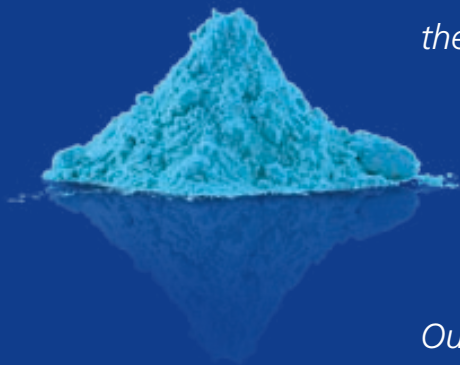
# POWDER COATING PRODUCTION OF THE HIGHEST QUALITY

*Put your trust in the market leader*

*Powder coatings are solvent-free coating materials that have gained a firm foothold when it comes to high-quality industrial surface coating. The grinding process required for production is extremely reliable due to the proven classifier mills of the ACM series from Hosokawa Alpine.*

*This has not changed since common powder coating technology has been in use from the 1960s to today.*

*This is because we have always continued to optimise our grinding and classifier technology over the years with the increasing quality requirements.*



*Our expertise not only ensures excellent results but also satisfied customers. No wonder that Hosokawa Alpine is still the leading manufacturer of classifier mills today.*

# THE ACM EC AND ACM EC-CL CLASSIFIER MILLS

*You have the choice:*

The ACM EC (Easy Clean) and ACM EC-CL (Classifier Direct Drive) classifier mills were developed to meet frequent demands for minimum cleaning times in the production of powder coatings. This is particularly important in industrial areas where frequent product changes take place or batch production is used. The ACM EC and the ACM EC-CL are customised for these applications. The mill housing is designed as a double chamber system. The grinding chamber lid can be opened safely and quickly at the touch of a button (depending on the size).

After opening the grinding chamber lid, the inner parts can be easily removed without the need for tools, as they are neither welded nor screwed to the housing. Depending on the size, the inner grinding chamber is composed of several segments, and the individual components never exceed a weight of 25 kg. This makes cleaning and maintenance work with the classifier mills ACM EC and ACM EC-CL especially user-friendly.

## **IMPRESSIVE ADVANTAGES**

- Particularly suitable for frequent product changes
- 50 % time saving with cleaning
- High availability
- Enormous cost saving
- Quiet operation
- Tangential air inlet
- Air-cooled liner for temperature-sensitive products

## **USER-FRIENDLY DESIGN**

- Internal parts can be removed easily and without any issue, i. e. the cleaning effort and time required for product changes are reduced to a minimum.



## **ACM EC**

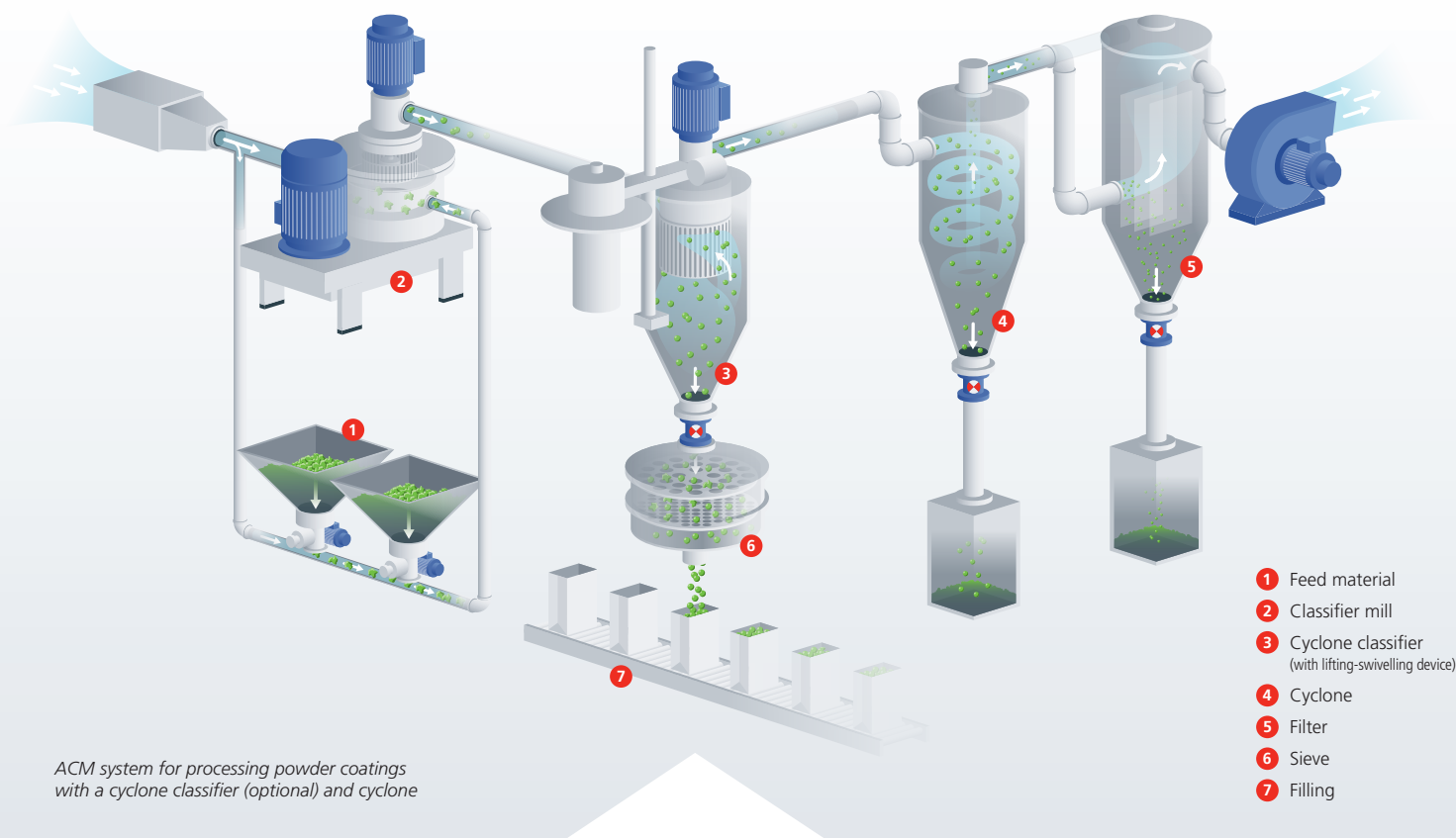
- Vertical product discharge (without fittings)
- Optimised for temperature-sensitive products, products prone to heavy build-up and products subject to abrasion



## **ACM EC-CL**

- Tangential product discharge
- Direct drive on the classifier
- Optimised for compact installation





## FOR THOSE WHO WANT MORE: CYCLONE CLASSIFIER

The new generation of high efficiency cyclone classifiers (HECC) combines the highest coarse material yield with efficient dedusting in classifier operation as well as optimised separation rates in cyclone operation.

### ADVANTAGES OF ALPINE CYCLONE CLASSIFIERS

- New generation with automated lifting-swivelling device
- Easiest change between classifier and cyclone operation
- No fittings, making cleaning quick and simple

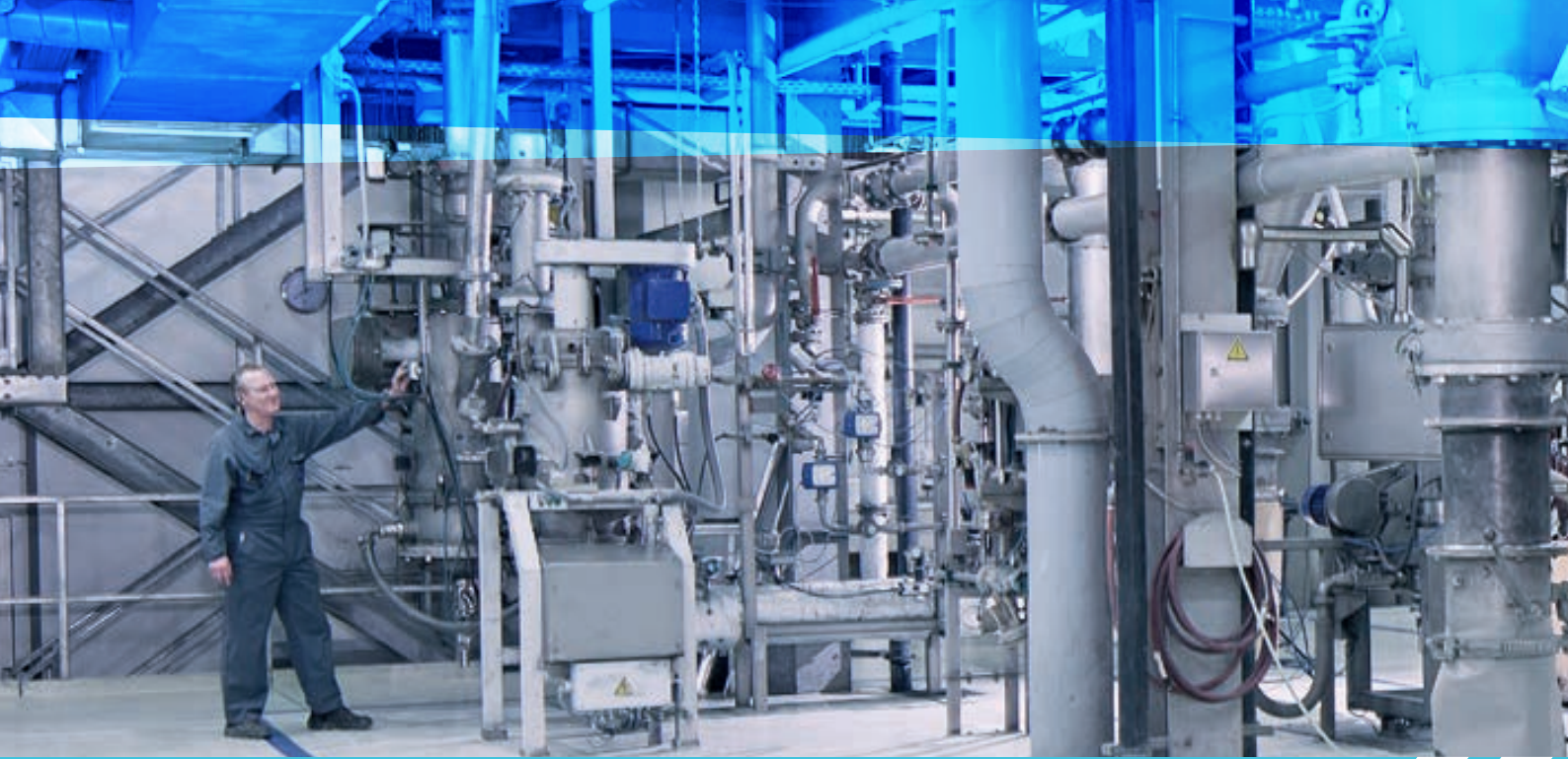
### ADVANTAGES OF CYCLONE CLASSIFIERS IN OPERATION

- Continuously adjustable reduction of the fine particle content
- Narrow particle size distribution
- Highest precision of cut

## THE PERFORMANCE FACTORS AT A GLANCE

ACM	10/15	20/25	30/40	60/75
Nom. Air volume [Nm <sup>3</sup> /min]	(15)/22.5	(30)/37.5	(45)/60	(90)/112.5
Drive line rotor [kW]	15	22	37	55
Nominal throughput [kg/h]	375	625	1,000	1,875

Larger systems available on request



## TEST FIRST – THEN DECIDE

Take advantage of the unique service and have your special system configuration tested in the planning phase at the Hosokawa Alpine Test Centre. More than 60 machines and complete systems as well as test laboratories are at your disposal for this purpose. The result: You will receive a system concept developed specifically for you. **Interested? Come by and see us!**

# ACM 5 NEX

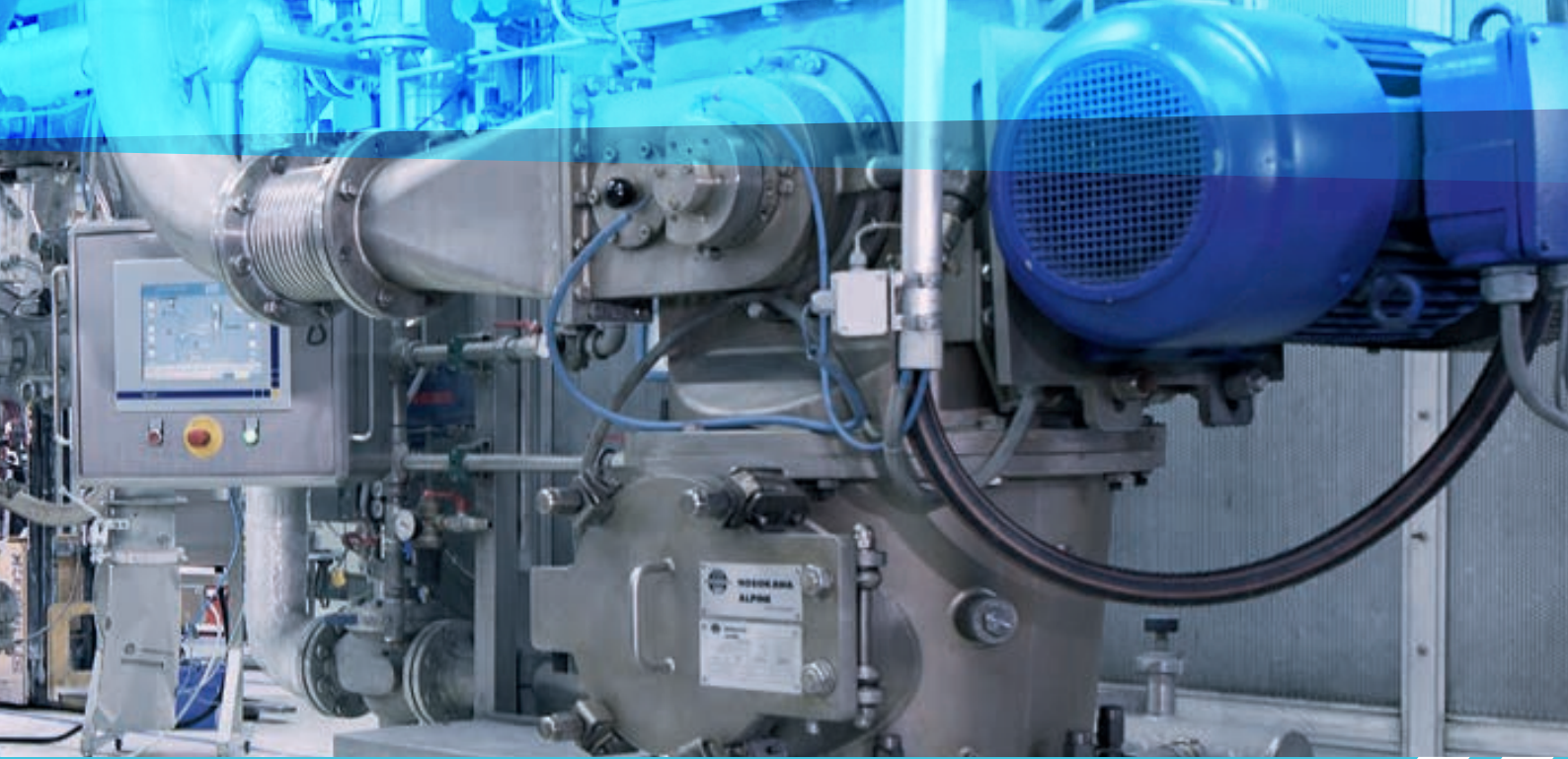
*With innovative protection concept for small-batch powder coating production*

The new ACM 5 NEX classifier mill offers numerous advantages of a simplified design – not to mention that it is ATEX-compliant and tested for explosion protection. The unique aspect about this concept: It can be created as a pressureless system by avoiding effective ignition sources. This eliminates the need for maintenance and inspections for pressure-shock-resistant system components and makes cleaning even easier.

### **IMPRESSIVE ADVANTAGES**

- › Pressureless design due to avoiding effective ignition sources
- › ATEX-compliant and tested for explosion protection
- › Tested by the European certification company Bureau Veritas:  
no ignition with standard powder coatings
- › Reduced inspection and maintenance effort
- › Easy cleaning and minimal downtime
- › Compact installation
- › High cost efficiency





## HOSOKAWA ALPINE – A SAFE BET!

*When it comes to safety, you can count on us. In addition to the operational reliability of a plant, the safety of the operating personnel is a top priority. Our plants are manufactured according to the current European specifications. When processing explosive dust products, our systems meet the requirements of the current explosion protection directive.*

# AIR CLASSIFIER TSP

*Maximum dust removal from powder coatings*

The air classifier TSP was specially designed for demanding classifying tasks. In addition to highest precision of cut, the design is focused on aspects such as handling, safety as well as operating and installation costs.

### **IMPRESSIVE ADVANTAGES**

- The critical ultrafine particle content of  $< 10 \mu\text{m}$  is  $< 1\%$  after classifying with the TSP air classifier
- Back-mixing free product flow ensures a high quality of dedusting
- Hinged housing enables optimal accessibility
- Easy and fast cleaning during product change minimises downtimes
- Especially suitable for toner and pigment classifying as well as for dedusting powder coatings containing titanium dioxide
- Highest precision of cut



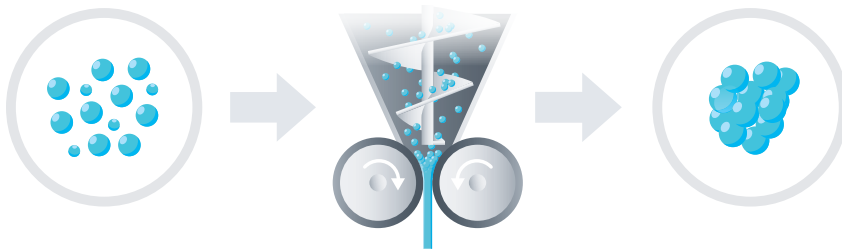
# COMPACTING AND GRANULATING POWDER COATING

*For increased efficiency of your production*

The fine dust produced during the manufacture of powder coating can be further processed using compacting technology. The compaction of powder coating on roller presses enables further processing of the fine dust. This inline recycling reduces waste, making your production more efficient.

## DRY GRANULATION: FROM POWDER TO GRANULES

- › Compaction of a powder by two rollers rotating in the opposite direction
- › Agglomeration occurs through the formation of interparticle bonds under mechanical pressure



## ROLLER PRESS

- › APC L, APC K and ARC K series
- › For smaller throughputs up to the laboratory range



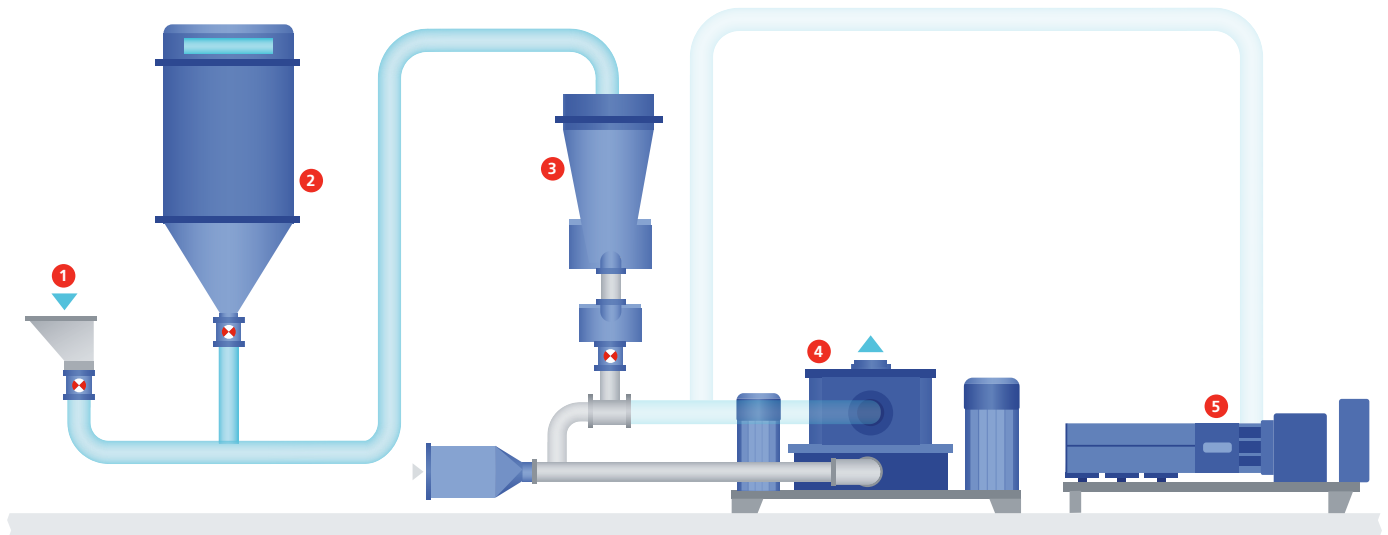
FINE DUST FEED

COMPACTION

RECYCLING IN ACM MILL

OR

REPROCESSING IN THE EXTRUDER



- |   |                      |   |          |
|---|----------------------|---|----------|
| 1 | Big Bag              | 4 | Mill     |
| 2 | Residual dust filter | 5 | Extruder |
| 3 | Compactor            |   |          |

## COMPACTING, GRANULATING & SIEVING IN ONE PROCESS

During the compaction process, a high bulk density is achieved without allowing hard particles to form. The fine dust accumulated in Big Bags can be fed into the feed hopper of the compactor either offline or directly inline from the residual dust filter. An agitator or vibration nozzles above the feeding screw prevent bridging of the fine dust.

The horizontal screw can be equipped with a vacuum venting system to increase the efficiency of the screw and the throughput of the compactor. The material is compacted into flakes in the roller gap of the compactor. After compaction, the material is crushed to the desired chip size or into granules by a roller crusher and then fed directly into the

grinding process or into Big Bags for further processing in the extruder. Depending on the feed material and its particle size, different throughput rates of between 80 and 150 kg/h can be achieved with an ARC L or K series roller press.

## WHY COMPACTION TECHNOLOGY? HERE ARE YOUR BENEFITS!

- Fine dust compaction
- Bulk density increase
- Stable, dust-free granules within the target particle size distribution
- Inline recycling
- No post-processing necessary



## OPTIONAL PRODUCTS FOR INDIVIDUAL REQUIREMENTS

To achieve the best possible results for all your requirements, you can equip your ACM machine with additional accessories:

### ***E3 BEATER***

- › Throughput increase up to 20 %
- › Reduced temperature input
- › Lower fine dust content
- › Lower energy demand
- › Available for mills designed by a third party

### ***NEW HIGH EFFICIENCY CYCLONE HEC***

- › Replaces the VME series
- › Optimised cyclone geometry for highest separation efficiencies with reduced pressure drop
- › Maximum accessibility for cleaning time optimisation
- › Temperature monitoring

### ***SPECIAL WEAR PROTECTION***

- › Use of tungsten carbide, hardened alloy casting, Hardox through to ceramics
- › Especially for highly abrasive products such as pipe coatings

## BENEFIT FROM THE KNOW-HOW OF THE MARKET LEADER

With a classifier mill from Hosokawa Alpine, you are deciding for more advantages:

### ***CLEANING***

- › Innovative coating materials reduce product coatings
- › Automatic cleaning of the ACM mill makes opening unnecessary

### ***COMPACT AND SAFE IN THE LAB***

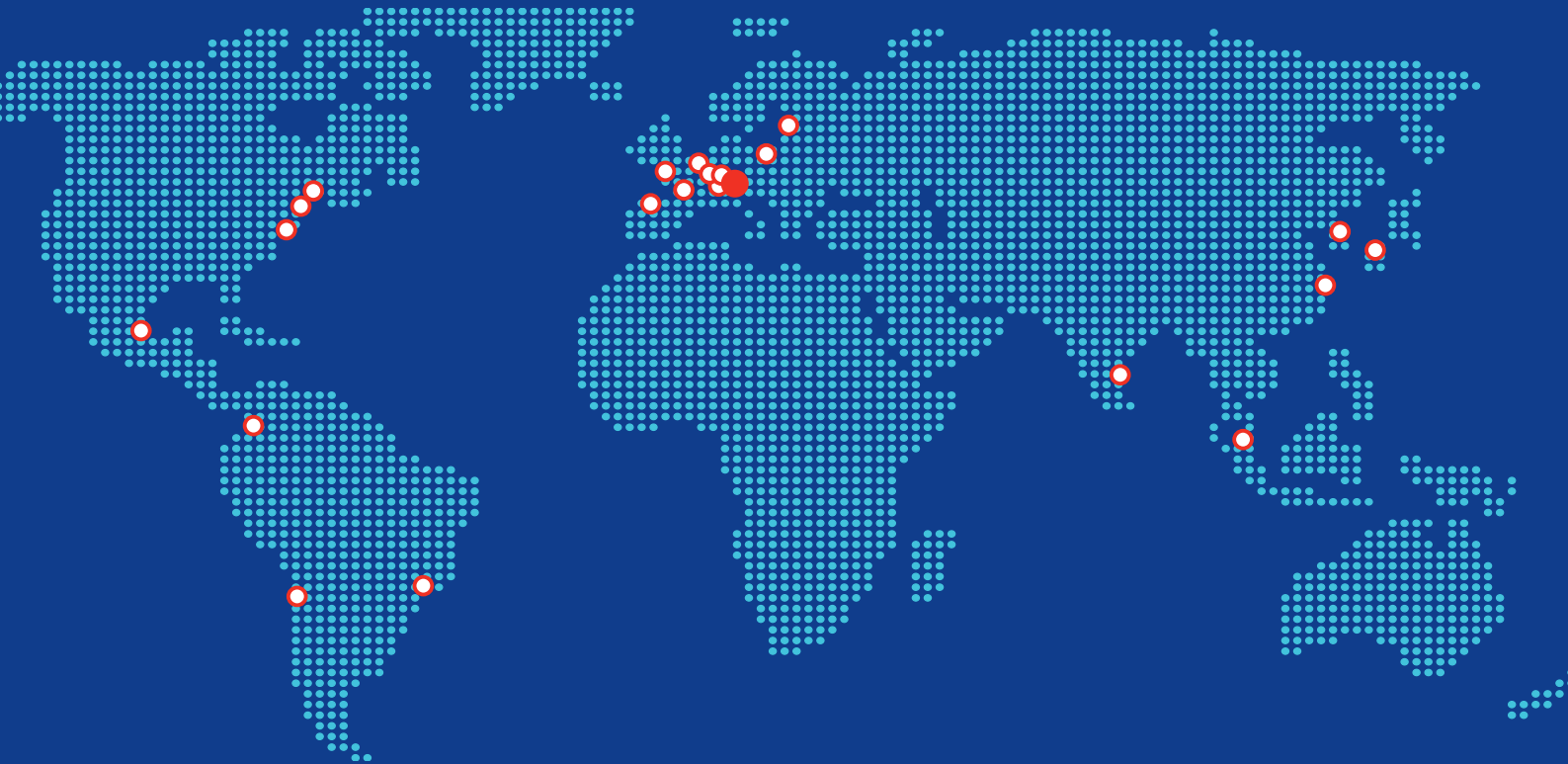
- › Multiprocess system 100 AFG
- › Small volume system 100 UPZ

### ***READY FOR THE FUTURE***

- › Years of experience in the toner sector open up new possibilities in powder coating
- › Jet milling technology for producing UDS powder without temperature entry
- › Optimised TSP dedusting classifier for steep PGVs

### ***PACKAGING LINES***

- › Fully automated finished product handling



# IN OPERATION SUCCESSFULLY ALL OVER THE WORLD

*Global challenges need reliable worldwide solutions. Any time and anywhere. When it comes to powder coating production, with a system from Hosokawa Alpine you can rely on*

- » **OVER 700 INSTALLED SYSTEMS WORLDWIDE**
- » **PROVEN TECHNOLOGY FOR POWDER COATING PRODUCTION**
- » **PROCESSING KNOW-HOW FOR A WIDE RANGE OF POWDER COATING CHARACTERISTICS**

*Would you like to know more? Then we look forward to talking to you!*



# HOSOKAWA ALPINE

Process technologies for tomorrow.

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*Do you have any questions? We are happy to answer them.*



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