



HOSOKAWA ALPINE

Process technologies for tomorrow.

COMPANY PRESENTATION



HOSOKAWA ALPINE

Process technologies for tomorrow.

POWDER & PARTICLE PROCESSING

Global market leader in mechanical process engineering for the preparation of fine powders

FILM EXTRUSION

One of the leading companies worldwide in the field of plastics processing machinery

HOSOKAWA ALPINE



» FACTS HOSOKAWA ALPINE

»» FACTS HOSOKAWA ALPINE



1898 founding of the Otto Holzhäuer'sche Maschinenfabrik in Augsburg



6 subsidiaries worldwide
(2x Germany, India, USA, Russia, Poland)



785 employees in Augsburg
(as of September 30th, 2019)



Takeover by the **Hosokawa Micron Corporation**, Japan 1987



Strong international orientation with approx. **80 % export quota**

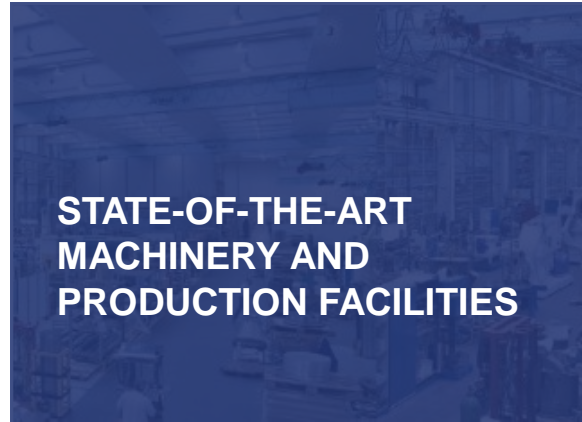


Revenue FY 2019
208 Mio. €*

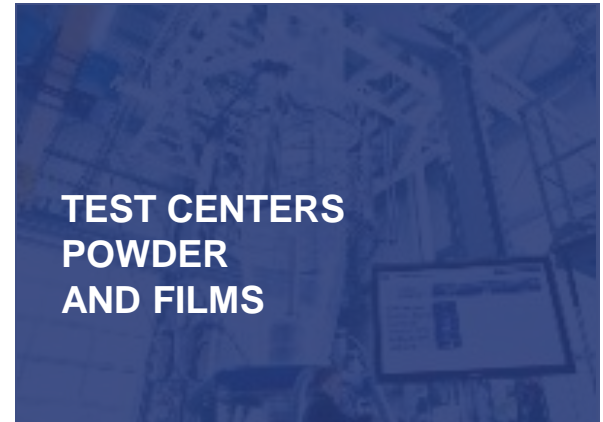
■ Powder & Particle Processing
■ Film Extrusion

* preliminary figures

» QUALITY CLAIM HOSOKAWA ALPINE



Highly qualified personnel from engineering to production to service



With more than 50 trainees per year, Alpine is one of the largest training companies in the region and thus secures the experts and specialists of the future



A photograph of a woman and a man in white shirts smiling and talking in a modern office. The woman is on the left, and the man is on the right. They are standing behind a white reception desk. The background shows a bright office with large windows, desks, and plants.

» HOSOKAWA ALPINE
An attractive employer!

» HOSOKAWA ALPINE

An attractive employer!

- We offer exciting tasks in an international environment
- Our modern plants and systems enable us to work innovatively
- Our projects in special mechanical engineering mean a varied working day for you
- We cooperate with well-known suppliers and offer you special conditions and discounts (e.g. corporate benefits)
- With us, you have a wide range of entry opportunities (training, dual studies, direct entry) as well as attractive career prospects and receive individual support from ALPINE CAMPUS





» AUGSBURG
Home of HAAG

» AUGSBURG – HOME OF HAAG

History and facts

- Founded 15 B.C. as Augusta Vindelicum, and thus one of the oldest cities in Germany
- Today university town with approx. 290,000 inhabitants
- Besides Cologne and Hamburg, Augsburg has the third largest old town in Germany
- There are about 530 bridges in Augsburg and thus more than in Venice (435)
- The Augsburg Water System has been a UNESCO World Heritage Site since July 2019

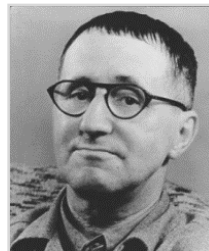
Famous personalities



Leopold Mozart



Rudolf Diesel



Bertolt Brecht

Hosokawa Alpine in a good industrial environment

KUKA



HOSOKAWA ALPINE

faurecia

**PREMIUM
AEROTEC**



ALPINE AS PART OF HOSOKAWA MICRON GROUP

Manufacturing sites

Hosokawa Alpine American Inc.
Northborough, MA, USA

Hosokawa Micron Powder Systems
Summit, NJ, USA

Serviços Avançados de
Processamento de Sólidos Ltda.
(Joint Venture) São Paulo, Brazil

Hosokawa Micron Ltd.
Runcorn, United Kingdom

Hosokawa Alpine Aktiengesellschaft
Augsburg, Germany

Hosokawa Micron Powders GmbH
Cologne, Germany

Hosokawa KOLB GmbH
Niederkassel, Germany

Hosokawa Micron B.V.
Doetinchem, Netherlands



Sales and service offices

Hosokawa Micron France

Hosokawa Micron St. Petersburg OOO

Hosokawa de Mexico S.A. de C.V.

Hosokawa Micron Shanghai

Hosokawa Micron Korea

Hosokawa Micron Malaysia

Hosokawa Micron India

Hosokawa Alpine Poland

1916 founding of
Hosokawa Micron Corporation
in Osaka, Japan

» ALPINE AS PART OF HOSOKAWA MICRON GROUP



1916 founding of
Hosokawa Micron Corporation
in Osaka, Japan



Consolidated revenue of
439 Mio. €* in FY 2019



Manufacturing sites
in 5 countries



16 R&D and test centers
at **11 locations worldwide**



1650 employees worldwide



* preliminary figures



» **SISTER COMPANIES AND SUBSIDIARIES**
of Hosokawa Alpine

» SISTER COMPANIES OF HOSOKAWA ALPINE



Hosokawa Micron Powder Systems (Summit, USA)

Division
Powder & Particle Processing:
Mills, classifiers, systems



Hosokawa Micron B.V. (AB Doetinchem, Netherlands)

Division
Powder & Particle Processing:
Mixers, driers, agglomeration



Hosokawa Micron Ltd. (Runcorn, Great Britain)

Division
Powder & Particle Processing:
Mills, classifiers, systems

» SUBSIDIARIES OF HOSOKAWA ALPINE



Hosokawa Micron Powders GmbH (Cologne, Germany)

Division
Powder & Particle Processing:
Toll grinding



Hosokawa Kolb GmbH (Niederkassel, Germany)

Division
Film Extrusion: Film winders,
pre-take-off and take-off systems



Hosokawa Alpine American Inc. (Northborough, USA)

Production, Sales and Service
division Film Extrusion:
Blown film lines in accordance
with US standards

Hosokawa Micron India Pvt. Ltd. (Chennai, India)

Sales office Powder and Film

Hosokawa Micron St. Petersburg (St. Petersburg, Russia)

Sales office Powder and Film

Hosokawa Alpine Poland (Warsaw, Poland)

Sales office Powder and Film



»» DIVISIONAL STRUCTURE

DIVISIONAL STRUCTURE

For optimal industry and customer service

HOSOKAWA ALPINE AG

Manufacturing and central services

- Supply Chain Management
- Finance
- Marketing
- HR
- IT
- Business development

Powder and Particle Processing



Pharma



Minerals & Metals



Chemicals



Food



Recycling

Division Service Powder and Particle Processing - [BLUESERV](#)

Division Technology (incl. test center for customer and internal trials)

Division Compaction

Division Rental and Used Machines

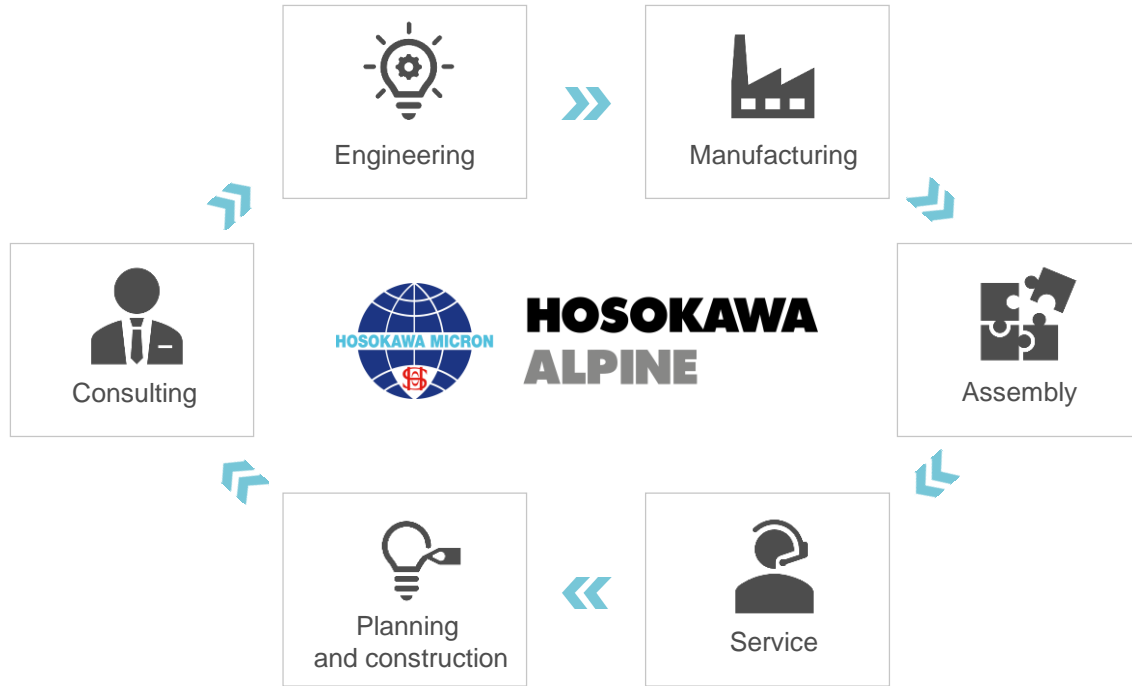
Division Sales Support

Film Extrusion

- Service Film Extrusion
- Technology Film Extrusion (incl. test center)

» HAAG

Your full-service partner in mechanical process engineering ...



HOSOKAWA ALPINE
BLUESERV



PROCESS
CONSULTING







»» **PROCESS CONSULTING**
as a Service

»» PROCESS CONSULTING AS A SERVICE

We offer a technical consulting service for the support of early phase projects, feasibility studies and concept development for complete turn key systems!



Organization of tests



Preparation of mass and energy balances



Determination of total costs for your profitability analysis

We provide you with a well-founded and reliable basis for making decisions on how to proceed further



Creation of flow diagrams



3D-Visualization of potential solutions



Holistic approach - from product delivery to packaging

CAMPUS

Keep on learning

» ALPINE CAMPUS



» ALPINE CAMPUS – WHAT WE OFFER



Targeted learning with the aid
of our competence model



Promotion of potential



Individual personnel
development



Attractive learning
opportunities



Customer trainings





» POWDER

» PRODUCTS AND SERVICES IN POWDERS DIVISION



MILLS / SHREDDERS



CLASSIFIERS



RENTAL AND
USED MACHINES



TEST CENTER



COMPACTORS



LABORATORY AND
RESEARCH



SERVICE
BLUESERV



**HOSOKAWA
ALPINE** ENGINEERED,
MANUFACTURED
& ASSEMBLED
in GERMANY

» TARGET INDUSTRIES OF POWDER DIVISIONS

Pharma

- Active pharmaceutical ingredients (API and HAPI)
- Containment
- Excipients (lactose, sugar, etc.)
- Cosmetics
- Cell culture media



Chemicals

- Metal and polymer powders for additive manufacturing
- Powder coating
- Flue gas cleaning with sodium bicarbonate
- Battery raw materials
- Waxes, resins, pigments
- Carbon Black



Food

- Food products
- Animal feed
- Luxury food
- Tobacco



Minerals & Metals

- Limestone: GCC, talc
- Graphite
- Zircon, quartz, ATH
- Metals, metal powder: aluminum, zinc
- Glass



Recycling

- Injection Molding / Blow Molding Extrusion / Thermoforming
- Film
- Composite materials
- Caoutchouc / rubber
- Recyclable materials (e.g. old cables, tire rubber)
- Special applications





» **CHALLENGES**
in process engineering

» CHALLENGES

in process engineering

- Protection against dust explosions
- Hygienic design
- Highly corrosive products
- Change in product behavior
- Strict regulations
- Wear protection
- High capacities
- Ultrafine particles
- Low energy usage



WE OFFER



Extensive system and process knowledge



Wide-ranging product know-how



More than 120 years of experience in special process engineering



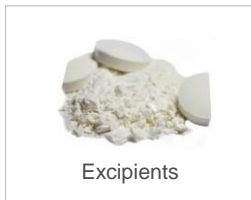
The perfect solution for you!

» DIVISION PROFILE PHARMA

Selected applications



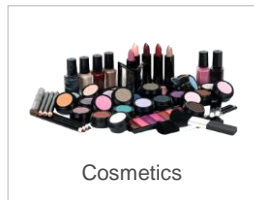
API



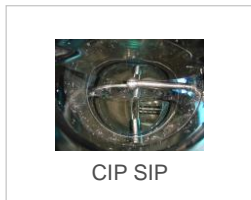
Excipients



Containment



Cosmetics



CIP SIP



Cell culture media

Presentation of the division Pharma

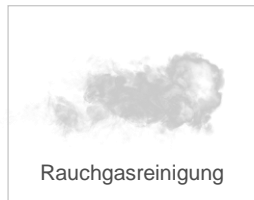
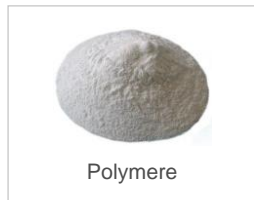
- 39 staff members
- 250 air jet sieves sold per year
- Over 500 projects during the last 10 years

Exemplary challenges

- Highest yield even with small product quantities
- Reliable protection of the employees
- Easily cleanable systems, no dead space, polished, good accessibility
- High demands on documentation
- Temperature sensitive products
- Avoidance of cross contamination (discoloration in cosmetic powder, product purity in pharmaceuticals)
- Sterilizability of the entire system when installed
- Compact design with good cleanability and high mixing quality for cell culture media
- Automation according to the latest GAMP standard
- Validation from specification through project management to customer acceptance

» DIVISION PROFILE CHEMICALS

Selected applications



Presentation of the division Chemicals

- 28 staff members

Exemplary challenges



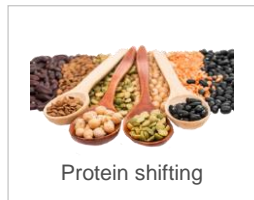
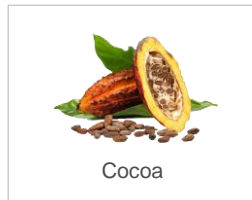
- Inert mode of operation in circular gas conditions
- Continuously adjustable separation cut from approx. 5 - 150 μm
- Exact upper grain limitation and dust removal
- High yield
- Dust and gas tight design
- Containment solutions for CMR substances



- Micronizing to highest fineness $d_{99} < 5 \mu\text{m}$
- Explosion-protected machines and systems according to ATEX
- Special design for handling adhesive products

» DIVISION PROFILE FOOD

Selected applications



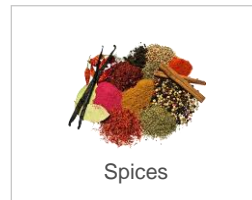
Presentation of the division Food

- 25 staff members
- October 2011: Founding of the division Food (before Pharma & Food)
- Oldest known food mill from 1934 (grinding of sugar)

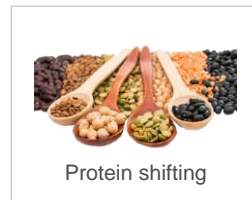
Exemplary challenges



- Explosive
- Tendency to caramelize at $T > 50\text{ }^{\circ}\text{C}$
- Fine grinding up to 99% $< 15\text{ }\mu\text{m}$



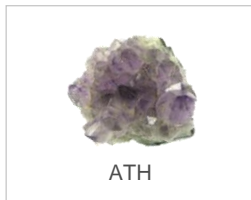
- Often pre-cutting necessary
- Fine grinding of fibrous spices
- Aroma preservation by cold grinding



- Pulses, wheat and oilseeds
- Good peeling necessary
- Separation of starch and proteins

» DIVISION PROFILE MINERALS & METALS

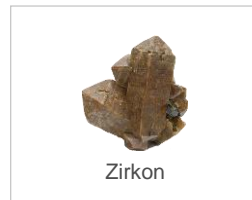
Selected applications



Presentation of the division Minerals & Metals

- Full process solutions from Turnkey projects to single machine capability
- Extensive detailed process know-how over multi mineral and metal applications
- 30 staff members

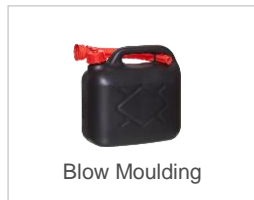
Exemplary challenges



- High productivity for very fine grades (down to 2,5 μm top cut)
- Wet and dry processing for high quality coated grades, including Breathable film grades
- High fineness $d_{50} < 1,5 \mu\text{m}$ with high laminarity ($> 3,5$) achievable
- High levels of fineness ($< 5\mu\text{m}$ top cut) at high productivity for high quality opacifying performance and in high quality ceramic Applications for maximum whiteness and brightness
- High levels of product consistency, low maintenance and productivity in high abrasion applications

» DIVISION PROFILE RECYCLING

Selected applications



Presentation of the division Recycling

- 15 staff members

Exemplary challenges



- Difficult to cut due to biaxial stretching and thicknesses down to only 8µm
- Temperature-sensitive / partly sticky or highly filled with mineral fillers
- In-line disposal of high-speed systems (650m/min) with lying widths up to 10.5m



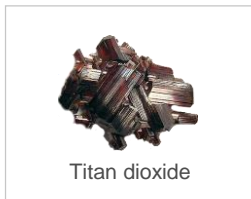
- Exclusively dry-mechanical preparation
- Optimum digestion for clean product separation and recyclable material yield
- Even the thinnest telephone cables can be recycled



- Large-volume parts including start-up slug
- Often core temperature up to 200°C
- Prevention of angel hair
- Dedusting of the grinding material

» DIVISION PROFILE COMPACTION

Selected applications



Presentation of the division Compaction

- 40 staff members (sales, service, R&D and aftersales)
- Set at the location in Leingarten
- Own Compaction test center with connected laboratory

Exemplary challenges



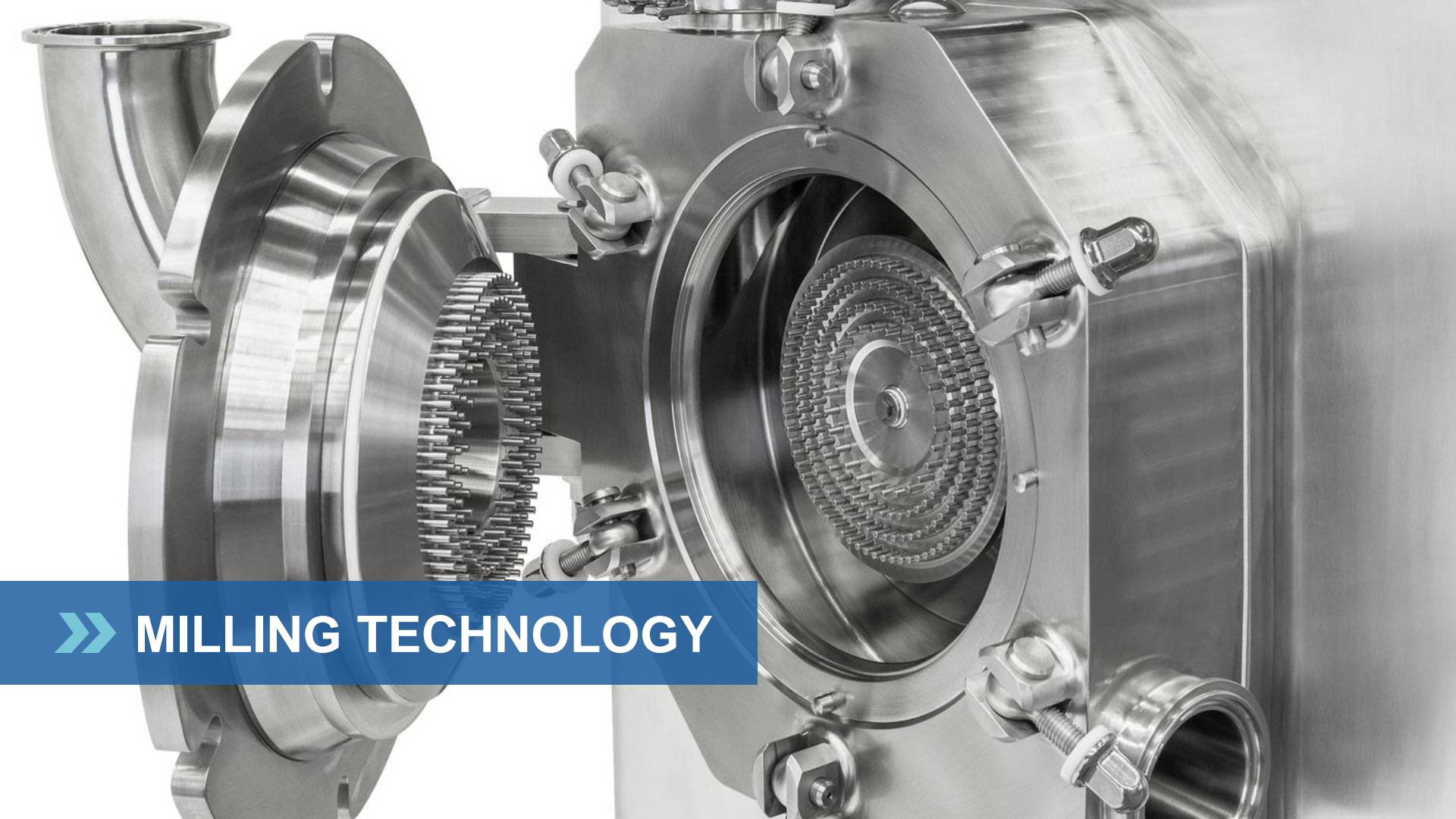
- Development and commissioning of production lines
- Combination of compacting technology and shredding / screening
- Production capacity 15 t/h granules



- Processing of smallest feed quantities (< 80 g)
- Highest requirements for process monitoring and documentation
- Frequent product changes

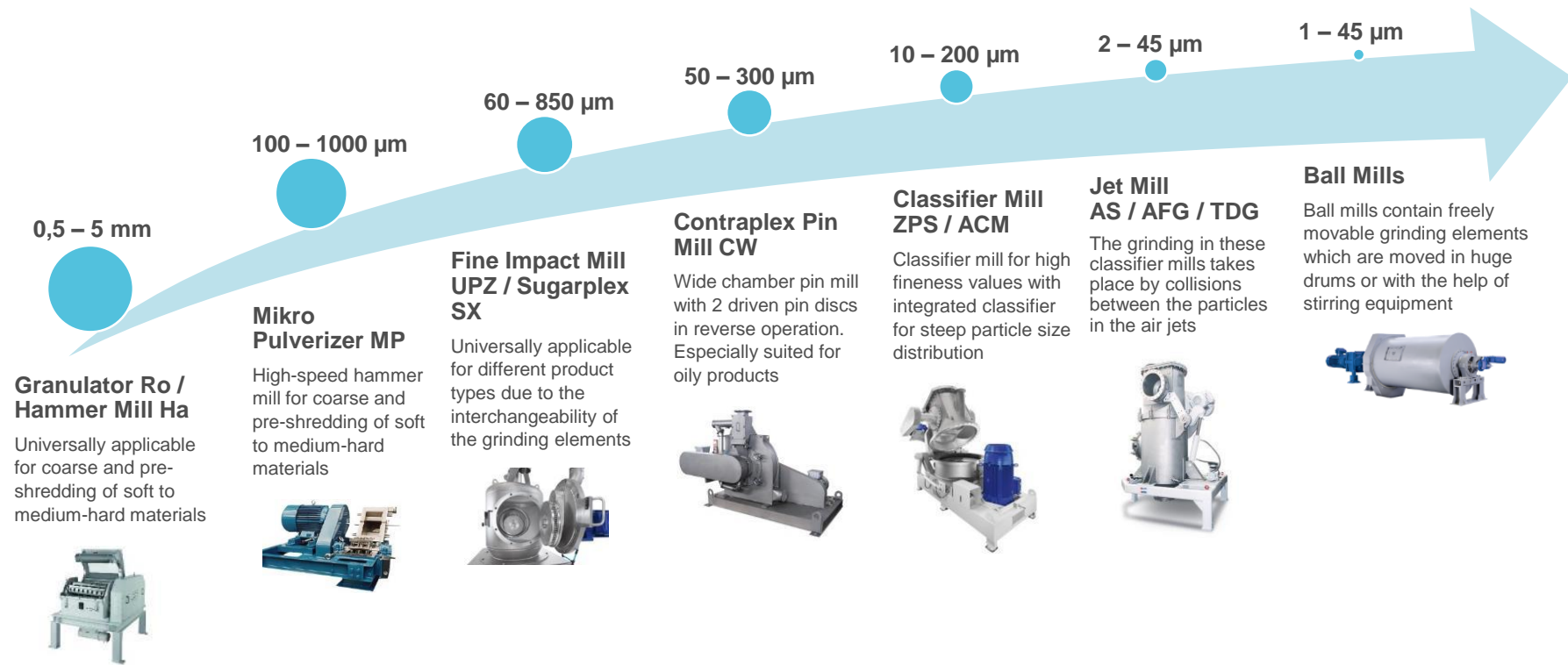


- Monitoring and control of moisture content
- Temperature- and pressure-sensitive feed materials



» MILLING TECHNOLOGY

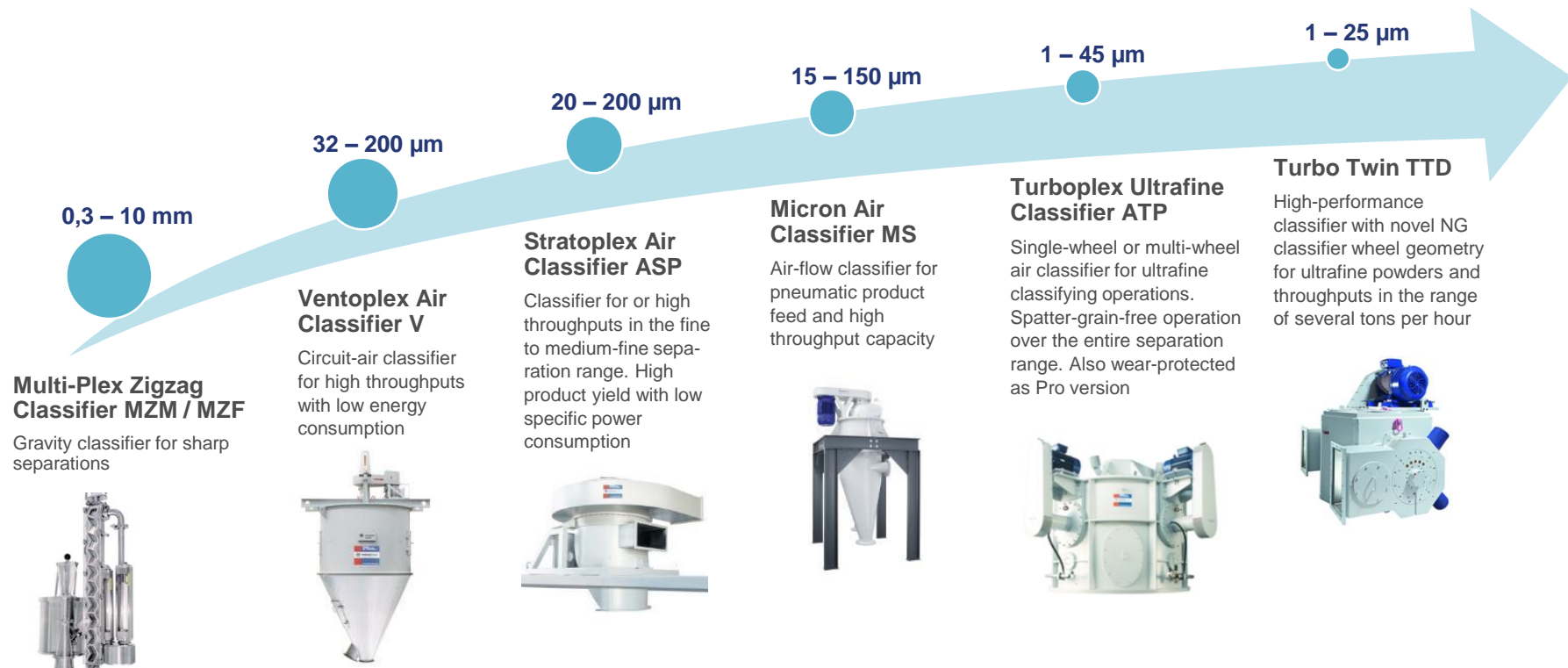
» MILLING TECHNOLOGY





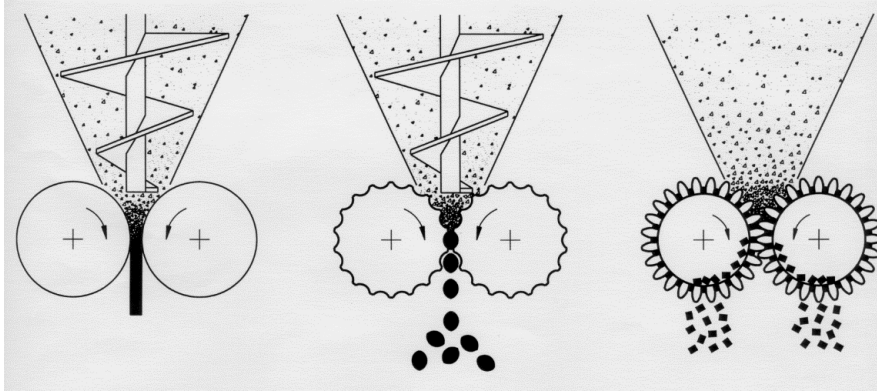
» CLASSIFIER TECHNOLOGY

» CLASSIFIER TECHNOLOGY

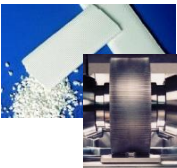


COMPACTORS

Machines and processes for producing granular bulk materials from powders



Compacting



Briquetting



Pelletizing



Compacting and dry granulation

Hosokawa Alpine Compaction offers compactors for all industries and sectors, including multi-stage plants:

- MS, CS and K series compactors
- Pharmapaktors of the L and C 250 series
- High-pressure grinding rolls
- Pelletizing machines of the series GCS and GMS
- Compactor HK designed for the production of coal briquettes

Kompaktor CS 25



Pharmapaktor K 200



» LABORATORY AND RESEARCH

picoline – Process engineering for research

- Flexible use of modules that represent the Alpine machine spectrum in miniature scale
- Developed for processing the smallest product quantities
- Ideal system for evaluating new grinding processes with unknown products



Air jet sieve e200 LS

- Hosokawa Alpine, the inventor and world market leader in air jet sieving, has been setting new standards for over 60 years.
- Determination of the particle size distribution in the range of 25 μm - 2000 μm
- Highly reproducible results through perfectly matched hardware and software



Further laboratory machines

- Multi-process systems
- 50 AS spiral jet mill
- 100 UPZ and 160 UPZ fine impact mills
- ...





» RENTAL AND USED MACHINES

» RENTAL AND USED MACHINES

Rental machines

Highest quality, flexible timing

The purchase of your own plant does not fit into your concept? Then the alternative could be renting



From short trials to multi-year leasing, anything is possible



Our offer ranges from very small systems to fully-grown production plants

Advantages

- High availability
- Flexibly responding to production changes
- Easier approval procedures in the company

Used machines

Hosokawa Alpine Originals

- High availability
- Retreaded by the manufacturer
- Use of original parts
- Warranty



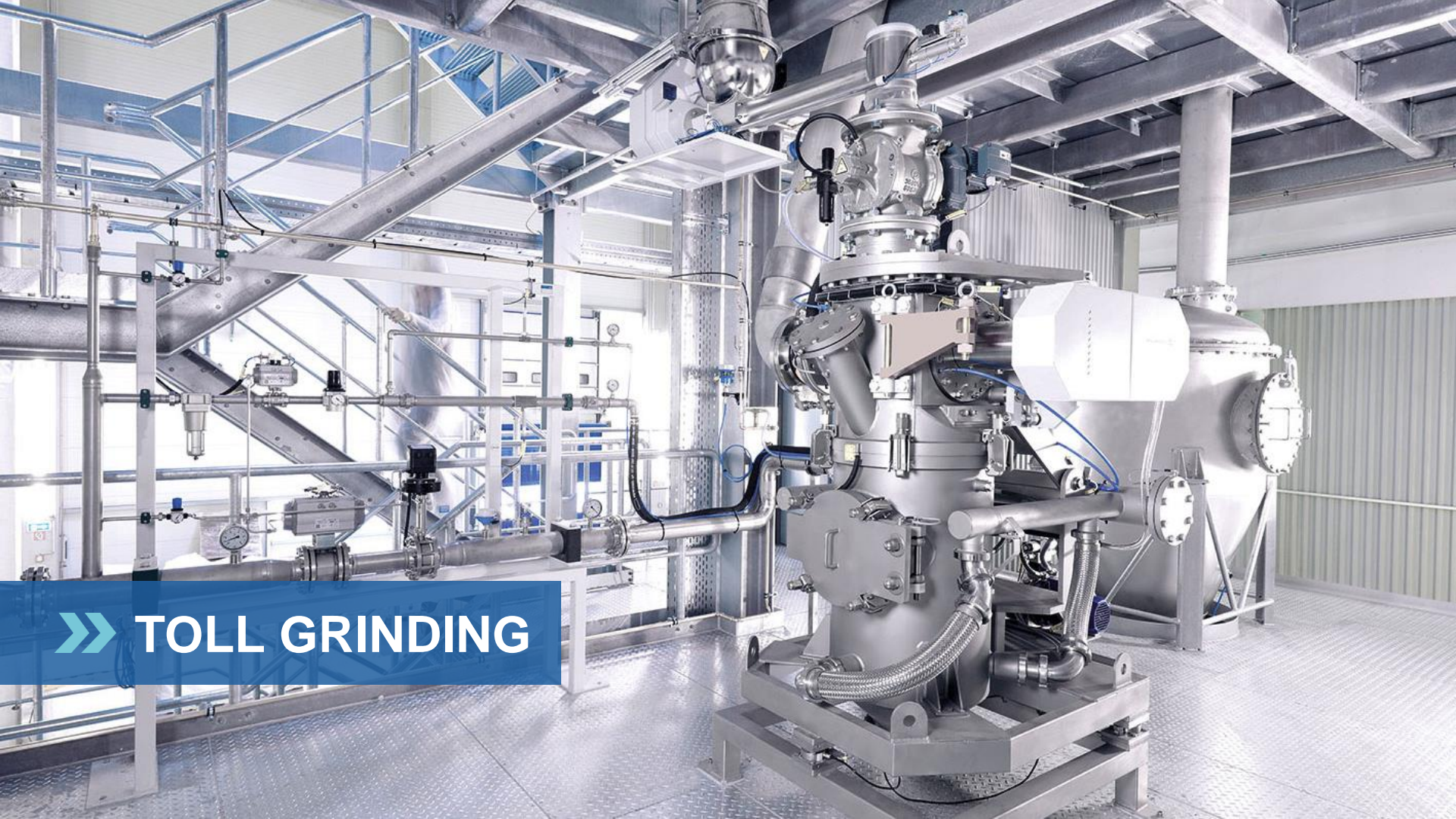
Before



Afterward



To be found on the Hosokawa Alpine website or on the common used machine portals
Immediately recognizable by the Hosokawa Alpine Originals Seal



» TOLL GRINDING

» TOLL GRINDING

Comprehensive range of powder processing services including transport, warehousing & packaging

Advantages of toll grinding

- Immediate ability to deliver without own production technology
- Fast, liquidity-preserving and low-risk market launch of new products
- Short-term reaction to changes in the markets possible
- No space required for systems and warehouse
- No planning and investment costs
- No increase in fixed costs (personnel, depreciation)
- Price transparency
- "Buying" often cheaper than "Producing"



Certified according to ISO 9001 and ISO 50001.
Kosher and Halal certification for various products



More than 100 customers from the chemical, mineral, food, cosmetics and retail industries, mainly from Europe



Currently goods turnover of approx. 14,000 tons per year on 18 production plants in 24/5 operation



» TEST CENTER POWDER

» TEST CENTER POWDER

Test center facts

- Area of approx. 3000 m² over 4 floors
- 60 plants from lab/pilot scale to production size
- Machines for dry and wet processing
- Fully equipped test laboratory with state-of-the-art measuring technology
- From 2020 with food grade area





» SERVICE - BLUESERV

» SERVICE - BLUESERV

- **Operational safety:** **BLUESERV** keeps production times high and prevents possible breakdowns
- **Product safety:** **BLUESERV** regularly checks, maintains and calibrates sensitive system components for end products in consistently high quality
- **Economic efficiency:** **BLUESERV** optimizes energy consumption, lowers operating costs and reduces downtimes
- **Value retention:** **BLUESERV** increases life expectancy through regular maintenance and modernization using original spare parts



Fon: +49 821 5906 462
blueserv@alpine.hosokawa.com

A close-up, blurred photograph of a blown film production process. A clear, translucent plastic film is being extruded from a die and is being stretched and cooled. The background is dark, and there are some out-of-focus lights. The overall image has a sense of motion and industrial activity.

»» **BLOWN FILM**

» PRODUCTS AND SERVICES IN FILM DIVISION



COMPLETE LINES
FOR FILM EXTRUSION



EXTRUDERS



DIE HEADS



WINDERS



FILM ORIENTATION
LINES/MDO



TEST CENTER



SERVICE



OTHER SYSTEM
COMPONENTS

TAKE-OFFS | COOLING RINGS
PROFILE MEASUREMENT

» MARKETS AND APPLICATIONS

Markets



Food



Construction



Pharmaceutical



Hygiene



Logistics



Domestic



Shipping



Electronics



Medical



Agricultural



Automotive



Chemical

Selected applications



Re-sealable packaging



Food pouch



Diaper and hygiene films



Compression packaging



Stretch hoods



Cereal film



Heavy duty sacks



Fine shrink film



Air-pillow packaging

The background of the entire image is a dense field of blue, translucent bubbles. Each bubble is roughly spherical and has a slightly irregular, wrinkled surface, giving it a textured appearance. The lighting is even, highlighting the highlights and shadows on the bubbles' surfaces.

» CHALLENGES BLOWN FILM

» CHALLENGES

Blown Film

- Constant high quality
- Different requirements and recipes
- High output with consistent quality
- Reduction of the consumption of new material
- Sustainability and energy efficiency
- Replacement of non-recyclable films
- Biodegradable materials



WE OFFER



Wide-ranging
product know-how



Extensive system and
process knowledge



More than 60 years of ex-
perience in film extrusion and
special process engineering



The customer and his
needs come first



The perfect solution
for you!



» APPLICATIONS

» APPLICATION FULL PE FILM

5-layer blown film line with inline MOD technology

Development partners



TOTAL



COVERISTM
ADVANCED COATINGS



Keep Discovering



ExxonMobil

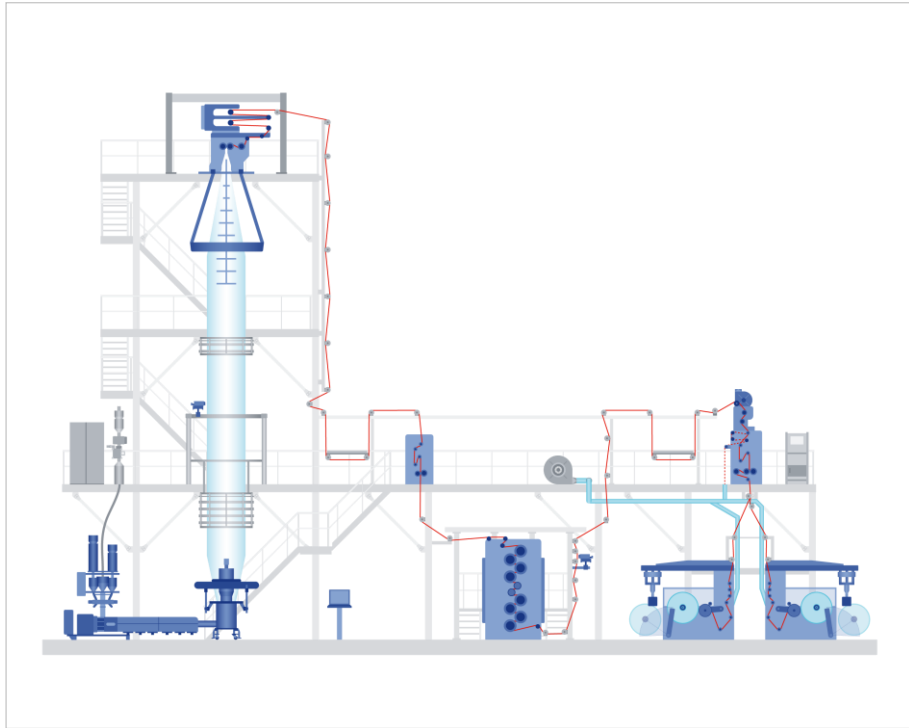


Application

- Flexible plastic packaging is one of the fastest growing segments of the packaging industry
- The proven and trusted MDO technology from Hosokawa Alpine is a crucial component in manufacturing high-performance single-material compounds made of polyethylenes.
- Full PE products can replace multi-material film solutions in bags and packages
- The recyclate obtained from Full PE laminate packaging can be used for valuable end products on a similar level

» APPLICATION BREATHABLE FILM

3-layer blown film line with inline MOD technology



Application

- Mainly used in diapers and sanitary towels
- Fast growing market especially in China, India, Brazil, and Turkey (60% volume growth)
- Sophisticated inline MDO technology required in combination with TRIO, high-speed process due to low thickness
- The results are unique products with excellent optics, best mechanical properties and strong barrier
- Trim reduction of approx. 50% possible (material savings, more net film width > more product, less in-house recycling)

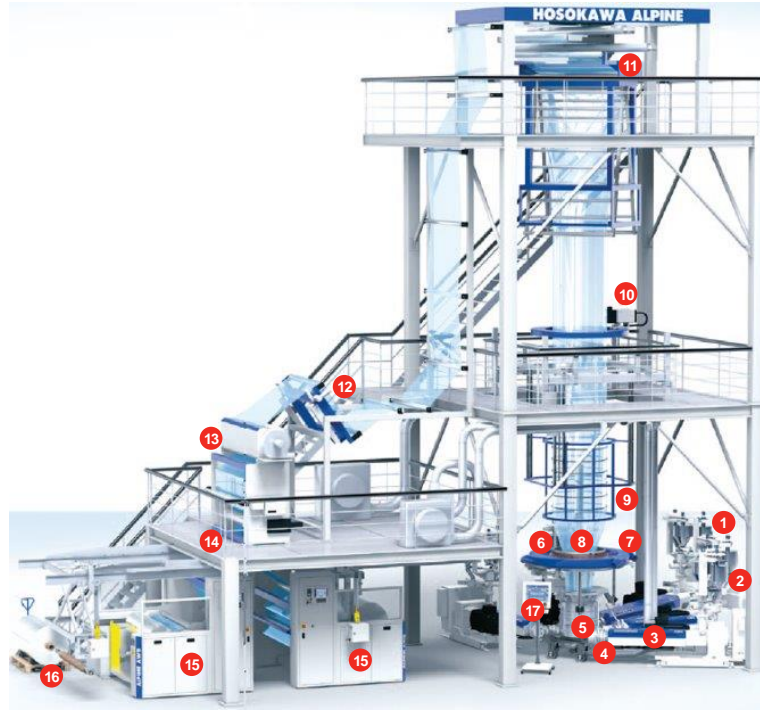


» FILM EXTRUSION

» COMPLETE LINE FOR FILM EXTRUSION

» Components/Process

- | | |
|----|---------------------------------|
| 1 | Material feeding |
| 2 | Material metering |
| 3 | Extruder |
| 4 | Screen changer with connections |
| 5 | X-Die head |
| 6 | Cooling ring |
| 7 | Profile control |
| 8 | Internal bubble cooling |
| 9 | Calibration basket |
| 10 | Profile gauge sensor |
| 11 | Film take-off |
| 12 | Web centre guide |
| 13 | Pre-treatment |
| 14 | Pre-take-off |
| 15 | Winder |
| 16 | Shaft extraction system |
| 17 | Process visualisation |



» EXTRUDER

Individual system configurations for demand-oriented film production



3 types of extruders in the Alpine portfolio

HX Flex

- Classic design with 3-zone screw
- The flexible standard extruder

HX Tech

- Axial grooves in the feed area of the cylinder
- Pressure build-up through forced conveying
- For special technical applications

HX Select

- Total output 50% higher compared to standard extruders
- Energy savings of up to 20% at significantly reduced temperature of the melt
- High performance extruder for selected applications

Available in graduated sizes with diameters of 50 to 135 mm and can be combined for 1- to 11-layer lines

» DIE HEADS

Our patented X-Die technology for multi-layer films is your key to the highest level of film quality

Features

- The X-Die was developed with state-of-the-art computer modeling
- Elimination of "portlines" when coextruding blown films
- Always unsurpassed film quality even at very high throughput rates
- Alpine die heads also mean very short rinsing times - providing the quickest program change on the market



» MDO FILM ORIENTATION LINES

Film finishing for excellent optical and mechanical properties through orientation



Hosokawa Alpine is the market leader for monoaxial film orientation lines (MDO - Machine Direction Orientation)

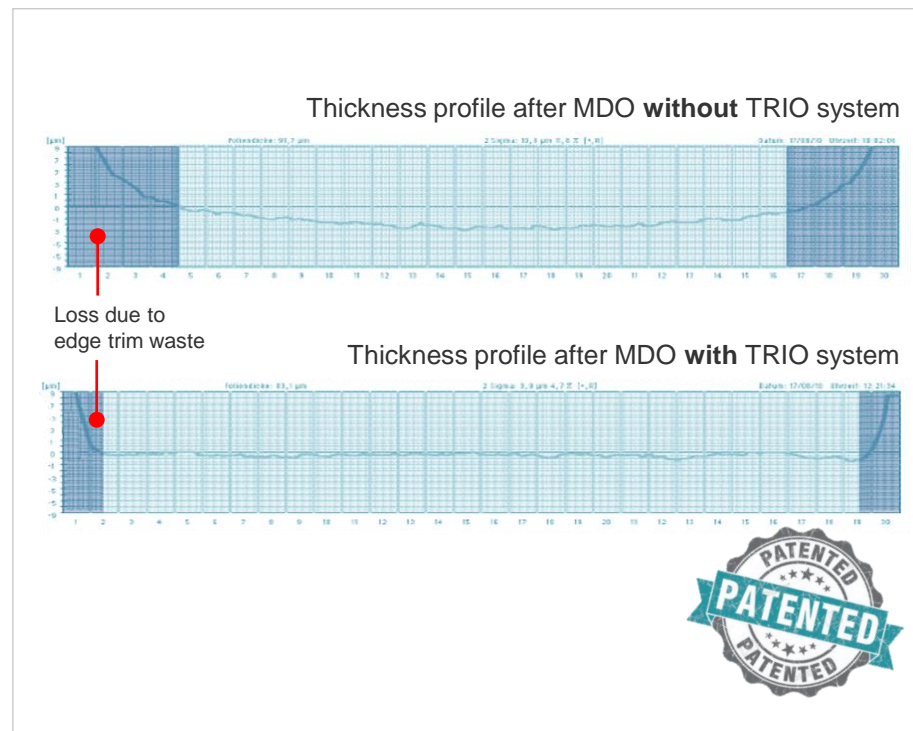
- Targeted generation of optical and mechanical film properties
- Minimum thickness deviation over the entire lying width
- Significant reduction of edge trim waste up to 50%.
- Saving of material and increase of net output

TRIO-TECHNOLOGY

Details and functionality

Features:

- Blown films deliberately get thin spots
- Thin areas are created in the area of the later edges after MDO
- These thin spots follow the vibration of the nip
- If the edges become thick after MDO, thin spots are compensated
- The result is a flat film with a uniform profile



WINDERS FROM HOSOKAWA KOLB

The film winder is the final element in the blown film process

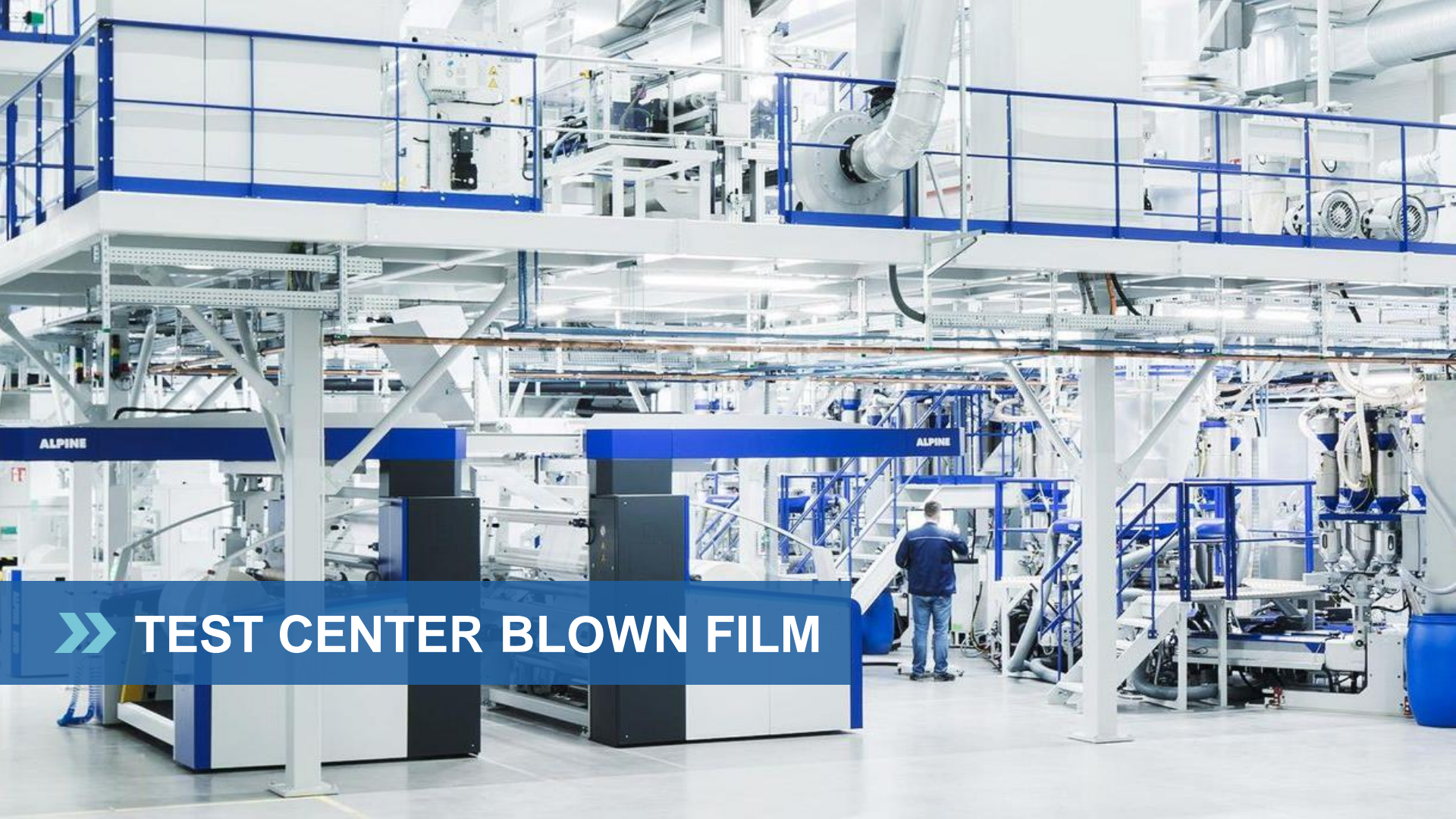


The Hosokawa Alpine subsidiary Kolb designs and develops this critical core component itself

- The winders can be used as single- or dual-station winders in a face-to-face or back-to-back configuration
- Winding without a pre-winding station possible using latest-generation winder technology

Features

- Winding diameters up to 1,500 mm and winding widths up to 2,600 mm for any type of production
- Line speeds up to 300 m/min for higher productivity of the entire line
- Material-saving winding without trimming possible



» TEST CENTER BLOWN FILM

» TEST CENTER BLOWN FILM

Test center facts

- 1,000 m² for trials with customers and suppliers as well as research and development
- Any line configuration is possible – from mono to 11 layers
- 150 - 200 trials per year
- Attached testing laboratory with state-of-the-art testing equipment

Current lines available in the test center

- 5-layer line (HX 65/65/90/65/65) with option for 2.0 m Inline MDO
- 5-layer line (HX 90/105/120/105/90)
- 9/11-line with option for 3.0 m Inline MDO
- Mono/3-layer research line





» SERVICE

» SERVICE

Our technical customer service with its highly trained and experienced staff is an essential quality factor for your Hosokawa Alpine blown film line.



Our service range includes:

- Spare parts supply with short-term availability via express delivery service
- Service personnel on site if required
- Maintenance, servicing and inspection for preventive purposes
- E-Support and remote diagnostic
- Blow head service and blow head cleaning
- Repair service in-house or on site
- Plant modernization and process optimization



Fon: +49 821 5906 666
spareSupport@alpine.hosokawa.com



eSupport (Service für elektrische Themen)
Fon: +49 821 5906 606



»» **WHAT'S NEXT?**

»» WHAT'S NEXT?

Technologies of the future

Alpine's next steps in digitization: Worldwide access to key plant parameters via tablet and smartphone and process analysis to increase efficiency



Wireless vibration measuring system for powder machines



Online process data directly on your office computer



Central digitization platform with which process data of various plant types can be read, stored, analyzed and visualized





» SUSTAINABILITY

» SUSTAINABILITY

Sustainability and sustainable management are becoming increasingly important in today's world – Hosokawa Alpine is also constantly striving to improve sustainable management in all areas



Recycling of machines via our division rental and used Machines



Increased research and development in the areas of **biodegradable bioplastics and recyclates**



Energy efficiency as one of the main objectives in the development of our machines



Development of **solutions** against the background of **circular-flow economy**



Maintenance of **location security** through continuous investments



Regional involvement in **Augsburg, Swabia and Bavaria**



Strong focus on **employee satisfaction** and health, resulting in **low employee turnover**



Reduction of travel activity through **remote services** (e.g. service glasses)



Promotion of e-mobility in the internal vehicle fleet (e-charging points and e-cars)



Continuous expansion of sustainability initiatives

»» MISSION AND VISION



For over 120 years, the name **ALPINE** has stood for the **highest quality and reliability of machines and systems**, as well as for **innovative drive** in the development of **new technologies and processes**.

We want to provide our **customers** with a **tailor-made service package** in order to create the greatest possible **availability of the machines** in the well-known **Alpine quality** and thus the basis for a **long-term, successful cooperation**.

» FUN FACTS AND FIGURES



10 MILLION/H

THE TYPICAL OUTPUT RATE OF A HOSOKAWA ALPINE TONER PRODUCTION LINE IS 250KG/H. THIS EQUALS 10,000,000 PRINTED DIN A4 SHEETS PER HOUR.

POWDER & PARTICLE PROCESSING



EXCELLENT QUALITY

During grinding at 15 °C, 87 % of the essential oils contained in cloves are retained.

HIGHLY VALUABLE PRODUCTS

The most expensive product ever processed on a Hosokawa Alpine 50 AS spiral jet mill cost **8,000,000 €/kg**.



70 METRES

... the amount of Hosokawa Alpine test sieves sold in a year is as high as the "Perlachturm" in Augsburg, Germany, where we are based.

50%
LESS TRIM-WASTE

thanks to our MDO + TRIO in-line technology.



5 µm is the thickness measurement of the thinnest film (PEHD) produced on Alpine blown film lines. For comparison: thickness of a human hair is **60–100 µm**.



HOSOKAWA ALPINE DIE HEADS WEIGH BETWEEN **160 kg** AND **9t**.

FILM EXTRUSION

THANK YOU
for your attention



**HOSOKAWA
ALPINE**