



PROCESS TECHNOLOGIES FOR TOMORROW

State-of-the-art powder processing systems



**HOSOKAWA
MICRON B.V.**



Dear customers and business partners,

At Hosokawa Micron, we have been developing innovative processing equipment and systems for a wide variety of products and markets for more than a century. Today, we are a technology leader in mixing, drying & agglomeration technologies, and our process solutions are employed in many sectors, including the chemical, mineral, metallurgical, food, feed, cosmetic, nuclear, pharmaceutical and plastics processing industries.

By focusing on these over the years, we have developed in-depth and unparalleled experience and knowledge that helps us to design new and innovative systems for a broad spectrum of applications. Our commitment to perpetuating and strengthening the reputation and success of our company translates into our endeavours to fully meet the expectations and demands of our customers based on high-quality products and collaborative partnerships.

Sustainability and circularity have become increasingly important topics for our customers in recent years. At Hosokawa Micron, we have actually been involved with sustainability for several decades since many efficiency-related and cost-saving features also have an environmental benefit. Recently, however, there has been a subtle shift in our focus to put sustainability first.

Nevertheless, we believe that sustainability must always go hand in hand with a healthy and profitable business, because that is the only way to achieve a lasting change.

The talent shortage is another key challenge. As part of the company's activities to nurture future talent, Hosokawa Micron co-founded the 'Innovation Hub Doetinchem'. The purpose of the Innovation Hub is to help educate a new generation of skilled professionals by offering research assignments and internships. Moreover, students provide fresh, new insights and are a continuous source of innovative ideas.

I hope you enjoy discovering more about Hosokawa Micron's possibilities on the following pages!



Christophe Krug
CEO

» HOSOKAWA MICRON: POWDER ENGINEERING AT ITS BEST

» Agglomeration plant in the Hosokawa Micron Test Centre in the Netherlands



TAILOR-MADE SOLUTIONS

We've got all your processing needs covered

Hosokawa Micron B.V. is a member of the Hosokawa Micron Group, an international provider of equipment and technology for powder and particle processing, plastics processing, and confectionery products, headquartered in Japan. The Group maintains facilities for research, engineering, manufacturing and service across Asia, the Americas and Europe.

The Hosokawa Micron Group has a wide range of high-quality individual technologies for you to choose from, but most of all we pride ourselves on our ability to help and support our customers – from concept to commissioning and beyond.

At Hosokawa Micron B.V. in the Netherlands, we are specialized in the development, design and manufacture of powder and particle processing machines, systems, and solutions. Based in Doetinchem, we have extensive facilities for R&D, testing, toll processing, manufacturing, and service. As a worldwide market leader, we are committed to continuing to set trends and standards in powder processing.

MIXING

We offer a wide range of innovative mixing equipment and systems for powders, pastes, slurries, and liquids. Our mixing technologies can be used for a multitude of applications, including homogenizing bulk materials, improving product quality, coating particles, fusing materials, wetting, dispersing liquids, altering functional properties and agglomeration.



Vitomix ribbon screw mixer



Vacuum drying system

DRYING

Hosokawa Micron provides a number of innovative drying, cooling and freeze-drying technologies for powders, pastes, slurries, and liquids. We carefully select, configure, and integrate all components and processes to ensure the optimal functionality, quality, and efficiency of your drying system.

AGGLOMERATION

The agglomeration of fine powders and particles (sometimes also referred to as 'wet granulation' or 'particle size enlargement') requires a diverse selection of process equipment. Hosokawa Micron offers a range of agglomeration solutions that can enhance various physical characteristics, such as flowability, wettability, dispersibility, bulk density, and product appearance.

INTEGRATED SYSTEM DESIGN

Hosokawa Micron offers a powerful combination of innovatively-designed and expertly-engineered powder processing technologies for mixing, drying, agglomeration, milling, classifying and compaction, including powder handling solutions for:

- » Automation & controls
- » CP/SIP cleaning
- » Containment
- » Dosing & weighing
- » Pneumatic conveying
- » Silo installations

To address all specific customer needs, Hosokawa Micron takes a 'total solution' approach. We help our customers to design complete powder processing systems that include process equipment as well as all the necessary product handling solutions, including components such as silos, steel structures and transport systems.

These turnkey projects ensure maximum efficiency, maximum sustainability, and a maximum focus on return on investment and total cost of ownership. Our powder processing systems also include ancillary equipment, assembly, commissioning, on-site training, and process optimization.



Continuous agglomeration system



AT HOME IN MANY INDUSTRIES

Challenge us with your application!



CHEMICALS

Hosokawa Micron offers a wide range of solids processing solutions for chemicals ranging from base chemicals in powder form, to fine-grade chemicals, dyes, pigments, plant protectors, fertilizers, and abrasives.



ENERGY & ENVIRONMENT

Our extensive knowledge and experience in handling hazardous and non-hazardous materials utilized in, for example, battery manufacturing and nuclear applications have earned us the trust of the world's leading manufacturers.



MINERALS

Hosokawa Micron provides the minerals industry with reliable and robust processing equipment and turn-key systems. Every system is engineered for high performance with maximal durability and minimal downtime.



COSMETICS

Key criteria when producing cosmetic powders are texture and application, colour consistency, minimum product loss and easy cleaning. When it comes to their production, Hosokawa contributes a range of processing technologies.



FEED

As feed manufacturing requirements are changing more and more towards food manufacturing standards, we always focus on designing process systems that are cost-effective and environmentally-friendly.



PHARMACEUTICALS

Our processing solutions are used to produce antibiotics, parenteral preparations, vitamins, synthetic hormones, and food supplements, (sterile) APIs and intermediates, as well as respiratory drugs, dry powders, tablets, and solid crystals.



FOOD & BEVERAGES

Product safety, process reliability and equipment cleanability are important aspects in food processing. At Hosokawa Micron, we always focus on keeping things innovative, simple, reliable, visible, cleanable, and avoiding dead spots.



METALS

Hosokawa Micron is renowned for its highly efficient, high performance equipment and process systems for the specialized requirements of processing industries, including for metals and additive manufacturing.



AND MANY MORE...

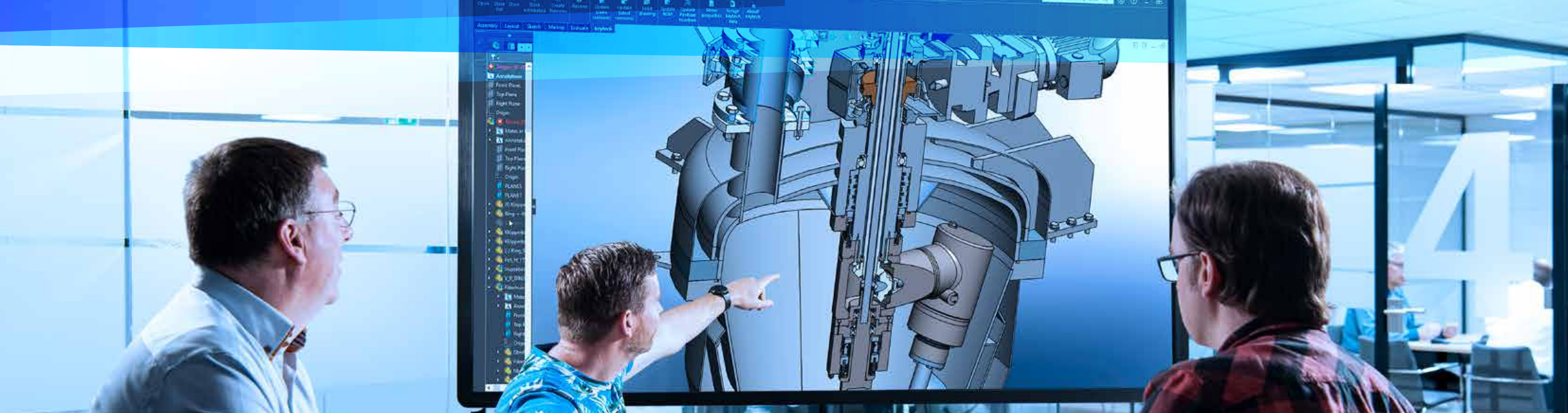
Hosokawa powder processing systems have been deployed in many industries for countless products and applications. Contact us to find out whether our technology is suitable for your particular product or process!

QUALITY ASSURANCE

We consider quality assurance to be everybody's business. It calls for the conscious and active involvement of all employees, at all levels of the organization and across and beyond functional borders. A continuously updated and improved quality management system forms the basis for implementing our quality assurance policy. The result: operational reliability, optimal equipment performance and customer satisfaction.

Hosokawa Micron B.V. is certified to comply with:

- » AD2000 HPO
- » ASME U
- » ISO 3834-2
- » ISO 9001
- » ISO 14001
- » PED 2014/68/EU



OUR PROJECT APPROACH

How we create your processing solution

We enjoy working in close collaboration with our clients and would happily help you find the optimum solution for your specific process requirements.

PROCESS CONSULTING & EVALUATION

Are you planning a new construction, or do you have an idea for a new laboratory, product or process and need support for the industrial realisation? Then it is important to take a holistic approach to the entire process. Our process consulting experts are the right partners to have at your side to find the optimum process solution for your specific situation.

After all, we develop your entire process for bulk materials process engineering and consider every single production step along the way – from the delivery of raw materials to the packaging of the bulk materials.

The result is a solid basis for decision making, based on the Hosokawa Group's wealth of expertise, and an investment that will help you make considerable savings throughout the process.

TESTING & ANALYSIS

Hosokawa Micron's test and development centre offers unique possibilities for testing your product to determine the most efficient process, system, or plant prior to final design. We can provide laboratory as well as production-sized trials. Afterwards, we provide you with a detailed test report with the test results.

Whether you wish to test a single machine or a complete powder processing system, the same skilled and experienced staff are here to help ensure that you are entirely satisfied with the results.

CONCEPTUAL DESIGN & ENGINEERING

Once all your requirements, objectives and process parameters are known, our engineers will design a complete solution, including handling, automation, control systems and detailed architecture, to optimize within the parameters of your objectives.

PURCHASING, OUTSOURCING & FABRICATION

Machining, construction, assembly and quality control take place in our manufacturing facilities, which are fully equipped with state-of-the-art machinery. We will purchase the necessary raw materials and parts, and outsource some of the components and equipment to specialist suppliers.

FINAL ASSEMBLY & TESTING

Once all the required parts are on hand, the equipment is assembled. The Factory Acceptance Test (FAT) helps verify that newly manufactured equipment meets its intended purpose. The FAT validates the operation of the equipment and makes sure the customers' purchase order specifications and all other requirements have been met.

ERECTION & COMMISSIONING

Hosokawa Micron provides a meticulous and professional installation service, distinguished by our unwavering focus on detail. Our team of specialists will lead you through each stage of the installation process at your site, ensuring a seamless start-up. From mechanical erection and cabling to I/O testing, dry start-up, start-up with product, and subsequent optimization, our experts will do everything to ensure that your system is fully prepared to perform effectively.

CONTRACT MANUFACTURING

Take advantage of our state-of-the-art production facilities and specialist contract manufacturing team, all focused on optimum output and performance. Whether for one-off projects or recurring jobs, we offer various operations for contract manufacturing: Mixing, Drying, Agglomeration, and Packing.

All processes can be tailored to your individual specifications. We offer short or long-term contracts, providing tailored production to suit your needs.

The advantages of contract manufacturing:

- » Clearly defined costs
- » No capital investment in equipment and buildings
- » Efficient production of small quantities
- » Use contract manufacturing as part of your development process
- » Produce materials for marketing purposes prior to investing in production capacity
- » Fill the gap between design and implementation of your new equipment or plant
- » Use contract manufacturing to manufacture new products in the launch phase, until sales have become solid and profitable.



YOUR SUSTAINABLE PARTNER

How we ensure optimum performance of your process machinery, with regard to people, planet & profit

At Hosokawa Micron, we are committed to contributing to a better and more sustainable future for all, not only with forward-looking technologies, but also by acting responsibly. Sustainability is a cornerstone of our corporate strategy, as we actively align ourselves with the United Nations Sustainable Development Goals (SDGs).

When it comes to innovations and cutting-edge technology, sustainability and economic efficiency must go hand in hand. We contribute to this every day - always with the aim of optimising our environmental, social and governance (ESG) performance.

We are actively focusing on sustainability in multiple ways: both within our own operational processes at our facilities, and – through our ongoing R&D work – for our existing and future customers. This includes reducing energy consumption, minimizing our carbon footprint, enhancing productivity, promoting raw material recycling, and facilitating the reuse of waste streams.

AT OUR OWN FACILITIES

Hosokawa Micron actively engages in various sustainability initiatives aimed at reducing our carbon footprint. Our efforts include implementing energy-efficient solutions such as LED lighting and a central pressurized air system, upgrading our CNC machinery and enhancing our internal logistics to minimize energy consumption.

TAILOR-MADE APPROACH

Our 'total solution' approach is a key pillar of our mindset. We work closely with every customer to explore how we can help them to improve the sustainability of their existing – and planned – processes. In all cases, we take a holistic view of the steps in our customers' current and planned production processes to ensure that they are optimally aligned from the perspective of productivity, sustainability, return on investment (ROI) and total cost of ownership (TCO).

SUPPLY CHAIN SUSTAINABILITY

Hosokawa Micron endorses sustainability across its supply chain, recognizing the vital role of working with our partners to reduce our environmental impact. In addition, a sustainable supply chain promotes long-term viability through proactive regulatory adaptation and diminished reliance on finite resources. Ultimately, embracing sustainability benefits the environment, economy, and society at large.

SECTOR-SPECIFIC SOLUTIONS

We serve customers in many different sectors, each with their unique needs. Here are some examples of how we support sustainability and circularity in various industries:

- » Food waste streams**
 Our energy-efficient dryers can be used to recover valuable nutrients or other high-quality raw materials from residual streams in the food industry.
- » Carbon black**
 The Hosokawa Group has developed a process for the sustainable recovery of carbon black from used car tyres after pyrolysis. This can then be recycled and used in the production of new tyres.
- » Battery materials**
 With technologies for use in several steps of the production process, Hosokawa is helping battery producers create smaller and more compact batteries with an increased energy density, a longer-lasting charge, and a longer useful life of the battery overall.



TECHNOLOGICAL INNOVATIONS / R&D

Sustainability is a key consideration in our ongoing R&D work. We are continually investing in the development of equipment, production processes and integrated solutions that help our customers meet their own Corporate Sustainable Responsibility (CSR) objectives.

- »** The use of a Hosokawa continuous drying system being more energy-efficient than spray drying.
- »** Continuous innovation of our drying systems to reduce the amount of energy lost or to enable the excess heat to be recovered and reused.
- »** Further increasing mixing line capacities, such as by optimizing the product flow and line cycle times.
- »** Remote service not only saves time and money but also reduces the carbon footprint by eliminating much of the travel involved in routine maintenance and repairs.

ISO 14001 & ECOVADIS SILVER MEDAL

Hosokawa Micron B.V. is ISO 14001 certified. Our certification covers all environmental themes of ISO 14001: air, soil, energy, waste, water, noise, and hazardous substances. In addition, Hosokawa Micron was awarded an EcoVadis Silver Medal for its sustainability achievements. Hosokawa Micron is proud of these achievements, and we look forward continuing the sustainable developments within our operations.





LIFECYCLE SERVICES

Ensuring the highest levels of performance, safety, and aftercare for your equipment

As a responsible manufacturer of industry-leading powder processing equipment, we believe we have a duty to provide all our customers with exceptional quality throughout the entire lifecycle of every solution and beyond – from design, manufacture, installation, and training, to maintenance, optimization, upgrades, and recycling. This is supported by our competent and responsive service team who provide full support covering installation, commissioning, on-site inspection, repair, preventive maintenance, and spare parts services.

The team comprises specialists in mechanical engineering, maintenance, instrumentation, and controls as well as process engineering. We work in an open and transparent way, allowing customers to walk in at any time and look over our shoulders. This demonstrates our commitment and reliability, creating lasting bonds with our customers.

SERVICE LEVEL AGREEMENT (SLA)

Create added security for your capital investment with one of our service level agreements. This allows you to schedule maintenance work according to your needs, using our technical expertise. Our sales engineers will help you develop a bespoke agreement that meets your specific maintenance requirements. This will help you save on the cost and inconvenience of unexpected engineering work while giving you peace of mind.

REPAIRS & MAINTENANCE

Downtime can be costly and stressful, which is why customers demand security, service, and support for their machinery. At Hosokawa Micron we offer a range of tailored maintenance services. These include corrective and preventive maintenance, service contracts and training, all designed to ensure the optimum performance of your equipment, throughout their entire lifecycle.

PREVENTIVE MAINTENANCE

Avoid downtime and ensure peace of mind with our preventive maintenance services. Our experienced maintenance engineers are dedicated to identifying potential mechanical, safety, and process line problems before they cause unnecessary downtime. We offer on-site advice, engineering, and training to optimize your processes. Our preventive maintenance services increase the lifetime of your plant and save you time and money in the long run.

SPARE PARTS SUPPORT

Minimize the hassle of sourcing spare parts with Hosokawa Micron's Spare Parts Service. Comprehensive stock, short delivery times from our facilities in the Netherlands. We also have a team of engineers on standby that can deliver the spare parts and install them for you on site. And if that is not efficient enough, we will happily discuss the options for your own inhouse Hosokawa inventory: spare parts to hand, 24/7.

UPGRADES & REFURBISHMENT

We have combined all our engineering services into three effective and affordable alternatives, replacing old machinery with new: retrofitting, upgrading and refurbishment. These services combine our high-quality products and spare parts with expert design and engineering as well as experienced staff. Our goal is to make sure our clients are left with equipment performing at the same level as brand-new equivalents and optimize their lifecycle. In other words, engineering at its best.

ALWAYS CONNECTED

When our service technicians are on site, they always have digital access to all the information they need to do their job. This is because their tablets are connected to our ERP system. They can also see exactly what their colleague did last time. Immediately after the job is completed, the customer receives a report of what has been done.

REMOTE SUPPORT

When you require our specialistic assistance, but a site visit by one of our technicians is not possible, it is good to know that our remote support team is on hand to help you solve your problem, remotely.

TRAINING

Hosokawa Micron provides training on-site or at our facilities in the Netherlands, including certification, for all aspects of process and equipment maintenance. Our training program will teach your staff about all the vital details of your Hosokawa equipment, helping them optimize your plant's processes. This saves you time and money while ensuring that everyone and everything is geared towards optimum performance, 100% of the time.

ATTRACTIVE EMPLOYER

Unlocking potential through personal growth



The skills, expertise and dedication of our workforce have helped Hosokawa Micron B.V. to become one of the world's leading specialists in powder mixing, drying and agglomeration technologies.

To sustain this success in the future, we provide our employees with extensive opportunities for personal and professional development, with a particular emphasis on flexibility, autonomy, teamwork, and a high-performance mindset.

WHAT OUR EMPLOYEES SAY

According to our employees, they particularly value our flat hierarchy with short lines of communication, our friendly and down-to-earth company culture, and the wide diversity across departments and disciplines.

They also appreciate the freedom to work flexible hours so that they can maintain a healthy work-life balance, and the career prospects our company offers.

INNOVATION HUB

As part of our activities to nurture future talent, we co-founded the 'Innovation Hub Doetinchem'. Besides helping to educate a new generation of skilled professionals by offering research assignments and internships, we ourselves often benefit from the innovation hub because students provide fresh, new insights and are a continuous source of innovative ideas.

INTERESTING WORK

Although all our activities – from R&D, testing, tolling, sales and engineering to production and service – are based out of our facility in Doetinchem, our company has a strong international focus, and we work on innovative projects with customers and colleagues all over the world.

What makes our business extra interesting is that our customers use the process equipment we design and build to make products that we all use, directly or indirectly. Without realizing it, our technologies play an important role in almost everyone's daily life!



FACTS & FIGURES

14 MILLION LOAVES

THE HOSOKAWA NAUTA MIXERS USED IN THE BAKERY INDUSTRY CAN PRODUCE **14 MILLION BREAD MIXES** EACH DAY.

The Hosokawa Micron Group has about

1900 EMPLOYEES

and manufacturing sites in five countries across three continents.

100,000 PATIENTS

One 30 kg batch of **inhalant powder** from our Cyclomix high-shear mixer is sufficient to supply 100,000 asthma patients with a month's worth of medication.

1923

After initially founding the company in 1923, Johannes Ewardus Nauta (1890-1957) invented the conical Nauta® mixer in 1939. The company was acquired by the Hosokawa Micron Group in 1982.

150 MILLION HOUSEHOLDS

The amount of **detergent powder** produced using Flexomix agglomeration technology each year is sufficient to do the laundry of all 150 million households in North America.



OVER 300 FLASH DRYING SYSTEMS

Sold to satisfied customers across the globe.



70% OF BABIES

Diapers with **super absorbent polymers** produced using Flexomix agglomeration technology keep 70% of the world's babies drier and happier.

HOSOKAWA MICRON GROUP WORLDWIDE



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