

# **CONTAINMENT TECHNOLOGY** & INTEGRATED SOLUTIONS

Gloveboxes & Isolators • Sterile Isolators • Downflow Booths Horizontal Laminar Flow Booths • Fume Cupboards • Filling and Weighing





# PIONEERING POWDER PROCESSING FOR MORE THAN A CENTURY

## We create synergies

Hosokawa Micron Group – established and headquartered in Japan – has offices in various locations worldwide, including throughout Asia and in Europe, which has four competence centres.

Our pioneering European companies have accumulated more than a century of technical, scientific, engineering and manufacturing expertise to provide you with customised processing technologies that offer optimal solutions for your application.

We are a globally recognised market leader in the concept, design and manufacture of bespoke powder, particle, liquid and vapour processing equipment and systems for multiple purposes, such as size reduction, drying, grinding, mixing, blending, agglomeration and compaction. Our comprehensive portfolio also features standard and bespoke containment equipment, including Gloveboxes/Isolators, Downflow Booths, Horizontal Laminar Flow Booths and systems for Filling and Weighing, as well as Drum and Container Bulk Handling.

Our expertise is trusted by a diverse and ever-increasing number of industry sectors – from pharmaceuticals, chemicals, food and beverages, cosmetics and minerals, to renewable energy and nuclear.

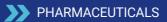
With an expansive portfolio of high-performance equipment and a full range of complementary services and support – such as product trials, equipment and process system installations, maintenance, servicing, testing and upgrades, operator training, a choice of remote or in-person FATs, SATs and the supply of rental equipment – Hosokawa Micron Group consistently innovates, evolves and sets new standards and trends in processing technology.



# YOUR TRUSTED PARTNER

for your specific industry











**>>>** CHEMICALS



COSMETICS



>>> NUCLEAR



FOOD & BEVERAGES

# WHY CHOOSE HOSOKAWA MICRON LTD?

From our UK base in Runcorn, Cheshire we provide a comprehensive design, manufacturing, testing, installation, commissioning and aftersales service to a wide range of industries in the UK, Eire and overseas.

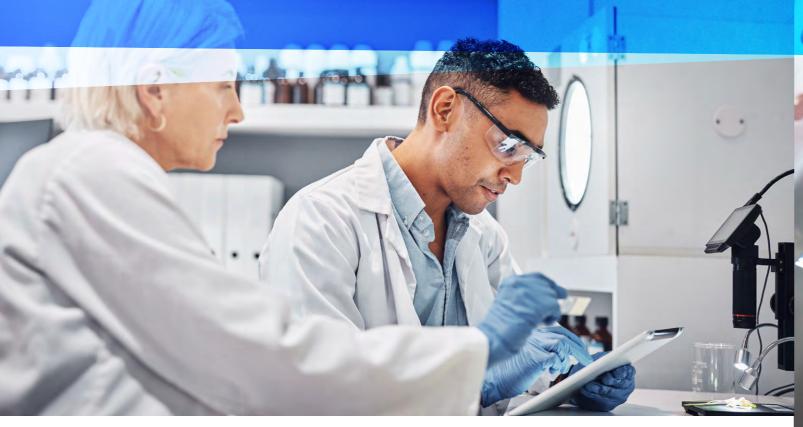
Hosokawa Micron Ltd is the manufacturer and worldwide supplier of Hosokawa Micron Milling & Mixing and Hosokawa Micron Containment equipment and process systems.

Our engineering skills and integration of the latest production technologies ensure that our high-performance equipment, extensive processing know-how and partnership approach to the development of new technologies and processing solutions are in global demand by well-known blue-chip companies.

We are proud to offer our customers a single source supply for integrated processing systems and component machinery to meet individual requirements and seek to set new standards in powder processing technologies that exceed expectations and deliver significant competitor advantages.

Hosokawa Micron Ltd's philosophy is to not only offer a standard piece of equipment or process system, but to work alongside our customers and their engineering teams to provide value-added solutions to very specific processing problems.





# WHY YOUR POWDER PROCESSING BUSINESS **NEEDS A CONTAINMENT SOLUTION**

In the world of powder processing, precision and safety are of paramount importance. Here are five reasons why a cutting-edge containment solution is essential for your business:

### Safety First

Exposure to airborne powders, particles, liquids and vapours can be hazardous to your employees' health. Proper containment ensures their well-being and reduces workplace hazards.

## >>> Product integrity

Containment solutions prevent contamination, ensuring the purity and quality of your product. A single speck of foreign matter can compromise an entire batch, leading to costly recalls.

#### Regulatory Compliance

Many industries have stringent regulations regarding dust emissions and product purity. A containment solution helps you effortlessly meet these standards, avoiding legal issues and potential fines.

#### Efficient Workflow

State-of-the-art containment systems streamline operations, reduce waste and ensure a consistent processing environment.

#### Cost Effective

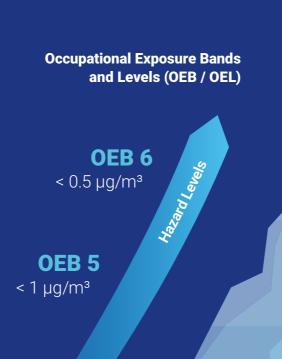
While an initial equipment investment is required, the long-term savings from minimised health risks, reduced product loss and increased processing efficiency are significant.

Elevate your powder processing business today with a dedicated, tailor-made containment solution from Hosokawa Micron Ltd



# SAFETY UP TO THE HIGHEST LEVEL

- >>> We offer uncompromised protection and process efficiency with our industry-leading containment systems
- >>> Innovative containment solutions from the experts in powder and particle processing
- Delivering Operator Exposure Levels down to 0.01µg/m³ and Operator Exposure Band 6
- >>> A single-source supplier of powder processing equipment and containment solutions
- >>> Delivering integrated and bespoke solutions which exceed expectations
- >>> Collaborating in close partnership with our customers worldwide
- Customised solutions to meet your specific contained processing requirements no matter how simple or complex



**Gloveboxes & Isolators** pages 8-9 **Aseptic/Sterile Isolators** pages 10-11 **Downflow Booths** pages 12-13 pages 14-15 **Horizontal Laminar Flow Booths Fume Cupboards** pages 16-17 Filling & Weighing pages 18-19 **Packing Heads** page 19 with LEV

OEB 4

 $1 - 10 \,\mu g/m^3$ 

**OEB 3** 

10 - 100 μg/m<sup>3</sup>

**OEB 2** 

100 – 1,000 μg/m<sup>3</sup>

**OEB 1** 

1,000 - 5,000 µg/m<sup>3</sup>



# **GLOVEBOXES** & ISOLATORS

In response to increasingly potent and potentially toxic pharmaceutical products and chemicals, Hosokawa Micron has developed a proven range of standard and bespoke barrier containment solutions, offering operator, environment and process material protection. Hosokawa Micron, a containment specialist for many decades, ensures that its advanced technologies meet the highest standards of safety and efficiency.

Engineered for manual and automated handling and processing, our Gloveboxes and Isolators are available in single and multi-cell variants for processes including milling, micronising, dispensing, sampling, pack-off and formulation.

# **TECHNICAL HIGHLIGHTS**

- Ultra-low μg/m³ OELs
- > cGMP, GAMP and FDA-compliant Isolators for API and potent material handling
- > Designed to incorporate Hosokawa Micron's wide range of size reduction equipment

#### **KEY FEATURES**

- > Handles and processes hazardous, toxic and potent materials
- > Available in a range of sizes and configurations
- Available in a choice of materials, including stainless-steel and Alloy C22
- > Safe change HEPA filtration systems
- > Uni-directional airflow systems
- > Bespoke equipment and integrated process systems
- > Double Safe Change filtration

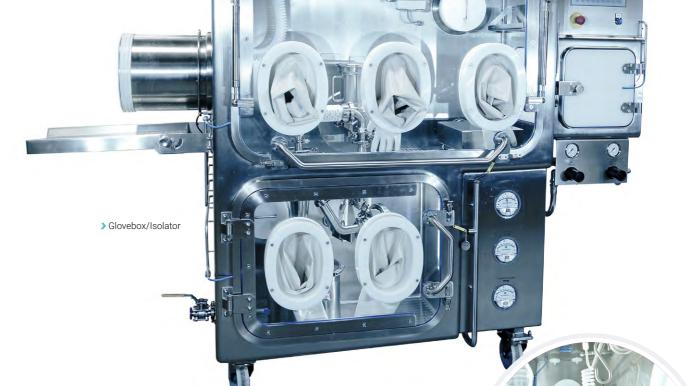
# **Bespoke Manual and Automatic Drum and Bulk Container Equipment**

From drum tipping for precise powder handling, to versatile IBC/ drum filling for powders and liquids, efficient IBC/FIBC discharging for powders and advanced drum emptying with vacuum discharge, suitable for powder and liquid materials, Hosokawa Micron offers a range of bespoke solutions to complement our containment equipment.

#### **OPTIONAL FEATURES**

- > Integrated CIP/WIP system
- > Integrated nitrogen purge system
- Negative or positive internal pressure control options
- Full testing and validation service, including IQ/OQ execution,
   OEL testing and filter testing





>>> OPERATOR PROTECTION

>>> PRODUCT PROTECTION

>>> EXTERIOR ENVIRONMENT PROTECTION

>>> CONTROLLED ENVIRONMENT MATERIAL HANDLING

>>> INTEGRATED ENGINEERING

>>> ATEX DESIGN AVAILABLE





# **ASEPTIC/STERILE ISOLATORS**

To meet the ever-increasing demand for more stringent sterile product testing and aseptic processing, Hosokawa Micron's innovative range of Sterile Isolators provides an operating environment with a validated 6 Log reduction in bio burden.

Hosokawa Micron Sterile Isolators incorporate a fully integrated Hydrogen Peroxide Sterilisation System, which is easily controlled by the isolator's touch-screen HMI and an independently controlled rapid gassing transfer chamber to maximise production efficiency. Full testing and validation service, including IQ/OQ execution, OEL testing and filter testing.

## **TECHNICAL HIGHLIGHTS**

- > Designed and manufactured to meet cGMP, FDA CFR21 Part 11, EMA and EU GMP Annex 1 guidelines
- > Standard designs or bespoke multi-chamber systems incorporating Hosokawa Micron or third-party processing equipment
- > Integrated catalytic converter for safe removal of residual hydrogen peroxide

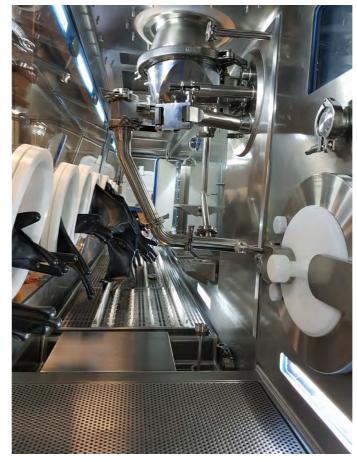
#### **KEY FEATURES**

- > HEPA filtration and unidirectional airflow
- > ISO Class 5 (Grade A) compliant
- > Integrated Hydrogen Peroxide Decontamination System
- > Multi-chamber variations
- > Freestanding or integrated designs
- > Optional viable and non-viable particle monitoring
- > Optional negative internal operating pressure and safe change filters for handling potent materials

#### **KEY APPLICATIONS**

- Sterility testing
- Aseptic packaging
- Aseptic filling of liquids and powders
- Aseptic powder processing (weighing/dispensing)
- > Formulation
- Vaccine manufacturing
- Aseptic vial filling
- > Biopharma injectables fill/finish operations
- > Cell and gene therapy







Sterile Powder Feeder

Rapid Gassing Chamber

- >>> BESPOKE SOLUTIONS
- >>> EASY TO CLEAN AND MAINTAIN
- >>> ERGONOMIC TESTING INCLUDED
- >> ANNEX 1 COMPLIANT
- >>> ATEX DESIGN AVAILABLE

10 HOSOKAWA MICRON LTD. HOSOKAWA MICRON LTD. | 11

# DOWNFLOW BOOTHS RECIRCULATION AND SINGLE PASS

Downflow Booths offer a safe working zone for the protection of operators from the potent, toxic and sensitizing particulates, liquids and solvents generated during manual handling activities such as sampling, dispensing, sub-division, charging and the offloading of powders or solvents.

Hosokawa Micron can offer an extensive range of standard design and bespoke Downflow Booth solutions, featuring the latest energy-efficient, clean air technology and supplied with or without integrated equipment.

# **TECHNICAL HIGHLIGHTS**

- > Bespoke or standard-design booths available
- Ergonomic, open-fronted designs
- > Available in a wide range of sizes

# cGMP FDA, EMA COMPLIANT DESIGNS

#### **KEY FEATURES**

- Operator exposure levels down to <10µg/m³ (8-hr TWA) can be improved with the use of flexible or rigid high containment screens to 1µg/m³ (8-hr TWA)
- > Flexible, modular build concept
- > Almost limitless widths, heights and safe working depths available
- > Standard designs at an affordable cost
- > Recirculation or single pass and hybrid solutions
- > Additional Local Exhaust Ventilation (LEV) when required

#### **OPTIONAL FEATURES**

- Stainless-steel, powder coated mild steel or composite cleanroom construction panels
- Controlled entry and exit airlocks
- > Temperature cooling/heating packages
- Multi-stage filtration with safe change capability
- > High containment screen
- Full testing and validation service, including IQ/OQ execution,
   OEL testing, filter testing and FAT/SAT testing









Integrated PLC Control System

- >>> QUIET OPERATION
- >>> 3D AND AIRFLOW MODELLING
- >>> LOW ENERGY CONSUMPTION
- >>> ATEX DESIGN AVAILABLE

| Booth Width             | 2 Metres | 2.5 Metres | 3 Metres | 4 Metres | 5 Metres | 6 Metres |
|-------------------------|----------|------------|----------|----------|----------|----------|
| Internal Width (mm)     | 2,000    | 2,500      | 3,000    | 4,000    | 5,000    | 6,000    |
| External Width (mm)     | 2,100    | 2,600      | 3,100    | 4,100    | 5,100    | 6,100    |
| Safe Working Depth (mm) | 1,800    | 1,800      | 1,800    | 1,800    | 1,800    | 1,800    |
| Front Buffer Depth (mm) | 750      | 750        | 750      | 750      | 750      | 750      |
| Rear Stack Depth (mm)   | 1,050    | 1,050      | 1,050    | 1,050    | 1,050    | 1,050    |
| Overall Depth (mm)      | 3,600    | 3,600      | 3,600    | 3,600    | 3,600    | 3,600    |
| Internal Height (mm)    | 2,300    | 2,300      | 2,300    | 2,300    | 2,300    | 2,300    |
| Ceiling Height (mm)     | 550      | 550        | 550      | 550      | 550      | 550      |
| Overall Height (mm)     | 2,850    | 2,850      | 2,850    | 2,850    | 2,850    | 2,850    |





# HORIZONTAL LAMINAR FLOW BOOTHS

Harmful airborne fumes and particles that are generated during processing activities are continually extracted and filtered from the operator's breathing zone by the Horizontal Laminar Flow Booth.

Available in standard and bespoke sizes, the ergonomic design of Hosokawa Micron's Horizontal Laminar Flow Booths allow a wide range of containers to be handled manually or automatically and are designed for fixed or portable operation or as a standalone workstation.

# **TECHNICAL HIGHLIGHTS**

- Complete with integral fan/motor systems, internal lighting, filtration, integrated hand tools, filling and weighing, processing or manufacturing equipment zoned according to ATEX area classifications
- > For wide-ranging applications including charging/discharging, filling/weighing, dispensing, vacuum transfer and solvent containment during pumping and dispensing

#### **KEY FEATURES**

- > Bespoke or standard designs and sizes
- > High-quality stainless-steel or coated mild steel construction
- > Easy to clean and maintain
- > Manufactured to meet cGMP guidelines
- > Low OELs achievable
- > Excellent product integrity
- > Fixed, portable or standalone workstations

#### OPTIONAL FEATURES

- Integrated CIP system
- Manually or pneumatically operated doors for the infeed/outfeed of containers
- > Integrated operator controls
- > Hazardous area controls
- > Container location and pneumatic eject systems
- > Carbon filtration
- Full testing and validation service, including IQ/OQ execution,
   OEL testing and filter testing



- >>> QUIET OPERATION
- >>> 3D AND AIRFLOW MODELLING
- >>> ENERGY-EFFICIENT
- >>> EXPLOSIVE MATERIAL HANDLING
- >>> ATEX DESIGN AVAILABLE



# **FUME CUPBOARDS**

Fume Cupboards are available in a wide range of designs, from affordable laboratory units through to fully bespoke systems for various processing and hazardous materials-handling challenges, including sampling, filling, weighing and a variety of other processing tasks.

These containment systems are used in a wide range of industrial and laboratory applications in sectors including nuclear, defence, forensics, pharmaceutical, healthcare, medical research, aerospace, bio engineering and chemical and are also suitable for other developing markets such as battery materials, advanced materials and renewables.

# **TECHNICAL HIGHLIGHTS**

- Air from the room is drawn into the enclosure through the open front sash and an integrated airflow sensor ensures that the minimum sash face velocity is maintained to ensure a safe working environment
- > The front sash can be adjusted to normal operating, standby and maintenance positions
- > Airflow testing to BS EN 14175
- Visual and audible alarms
- Designs suitable for a range of containment requirements to comply with customer-specified OELs and PPM limits



#### **KEY FEATURES**

- > Standard designs or bespoke systems to any size and configuration
- Manufactured from a choice of materials, including high-grade stainless-steel and powder-coated steel
- Toughened, laminated glass sash window with mechanical stops and sash position sensors
- Electrics pre-wired to consumer unit, complete with built-in RCBOs and MCBs
- > Interior chamber is easy to maintain and clean

#### **OPTIONAL FEATURES**

- > Hazardous areas systems available (eg. ATEX-compliant)
- > Full range of optional accessories
- > Standalone or integrated into a process system
- Integrated weigh scales
- > Integration of services (gas, water etc.) for rapid on-site connection
- > Integrated or remote extract and HEPA filter systems
- > Integration of carbon filters and spark arrestor filters
- Full testing and validation service, including IQ/OQ execution,
   OEL testing and filter testing





- >>> STANDARD AND BESPOKE DESIGNS AVAILABLE
- >>> EASY TO MAINTAIN AND CLEAN
- >>> FULL RANGE OF OPTIONAL ACCESSORIES
- >>> cGMP-COMPLIANT DESIGNS AVAILABLE
- >>> ATEX DESIGN AVAILABLE



Accurate, stable and repeatable weight-controlled filling systems from Hosokawa Micron maintain the highest standards of hygiene, dust control and product integrity.

Available in standard or bespoke designs, our Filling and Weighing systems can be designed for use in hazardous areas. The systems incorporate interchangeable, Hosokawa Micron-designed, inflatable packing heads and integrated weigh platforms to provide automatic control of bulk and dribble filling modes.

# **TECHNICAL HIGHLIGHTS**

- > Expertly engineered for dust-free transfer
- Accurate weighing of powders, granules and liquids
- > Internal filter and purge function to reduce product loss is a standard feature

#### **KEY FEATURES**

- Operator exposure levels down to <10µg/m³ (8-hr TWA) can be improved with the use of filtered horizontal laminar (unidirectional) air flow flexible or rigid high containment screens to 1µg/m³ (8-hr TWA)
- Designed for flexible filling of a range of container sizes including charge bottles and drums with or without liners
- > Suitable for single bag or continuous liner filling operations
- > Manufactured to be FDA, cGMP and EMA compliant
- A single, easy-to-read, flush-mounted control panel display, including weight and other process parameters. The system can be connected to the customer's distributed control system (DCS)

#### **OPTIONAL FEATURES**

- Gravity or motorised roller track section to assist entry and exit of filled containers
- > Integrated electrical and pneumatic controls for standalone systems
- > Manual or pneumatic platform height adjustment
- > WIP/CIP system
- > Drum base vibration system
- In-line product sampler
- > FDA-compliant seal materials
- Available in a choice of materials, including stainless-steel and Alloy C22
- > Additional Local Exhaust Ventilation (LEV) when required
- Full testing and validation service, including IQ/OQ execution,
   OEL testing and filter testing







## Packing Heads with LEV

Hosokawa Micron offers a wide range of packing head solutions to complement our Filling and Weighing systems, including interchangeable sealing heads that can be changed in less than a minute, compact inward seals that do not come into contact with the product and outward or downward inflating seals made to a cGMP design.



- >>> PRECISION WEIGHING
- >>> USER-FRIENDLY INTERFACE
- >>> SEAMLESS INTEGRATION
- >>> STANDARD AND BESPOKE DESIGNS AVAILABLE



# **HOSOKAWA MICRON** your system solution provider

Hosokawa Micron's extensive experience encompasses delivering diverse processing solutions for a wide range of industries and includes turnkey containment and processing systems for Hosokawa Micron-brand drying, mixing, air classification, size reduction, agglomeration and compaction equipment, as well as creating containment systems to house third-party process equipment.

Hosokawa powder processing equipment, as well as third-party auxiliaries, can be re-designed for installation inside Gloveboxes/Isolators for a more bespoke processing response and to deliver an improved ergonomic solution.





Hosokawa Micron Group is a global provider of equipment, systems, processes and services. We guarantee process solutions for almost all industries and business areas with this suite of services.



# MORE THAN 100 YEARS OF EXPERIENCE

Hosokawa Micron has been developing innovative processing equipment and systems for a wide variety of products and markets for more than a century. As a result, we can draw upon an unparalleled amount of know-how when designing new process systems for our customers.



# INNOVATIVE TEST CENTRE

Our research and testing facilities contain a wide choice of equipment for the most varied plant configurations. Our skilled and knowledgeable experts are available to determine the best possible powder processing solution for your process, ensuring that all your requirements are met.

# **Integrated Powder Processing Solutions**

### **FEEDING**

Hosokawa Solids provides its own developed process solutions and systems in the core competences of storage, conveying, dosing and weighing technology. The components from Hosokawa Solids are manufactured by a highly qualified and experienced team. In addition, Hosokawa Solids offers adapted processes and homologations for your specific industry and design line.





## **DRYING**

Hosokawa Micron offers a wide range of innovative drying technologies for batch and continuous processing, including vacuum drying, freeze drying and flash drying of materials such as powders, pastes, slurries and liquids.

## **MIXING**

We supply skids for heating or cooling our drying equipment and for cooling ancillaries. A process air heater can be selected, depending on utilities such as steam, electricity or gas.



## **MILLING**

Hosokawa Micron designs and manufactures Isolators where different Hosokawa-brand milling solutions can be integrated. An Isolator system with several integrated griding systems offers the user a high degree of flexibility for R&D applications right through to the production of large batches.



# COMPACTION

Hosokawa Micron offers a wide range of compacting and agglomeration equipment for various industries. The Pharmapaktor®, for example, is ideal for processing potent pharmaceutical ingredients and is available as a standalone piece of equipment, but we strongly advise pairing it with a Hosokawa Micron Isolator, tailor-made to meet ATEX, FDA, GAMP 5 and OEB 5 standards.





# **CONTROLS AND PROCESS AUTOMATION**

Hosokawa Micron process systems include the latest hardware and software controls, optimally integrated to ensure a consistently high product quality under variable conditions and circumstances. We supply ergonomic and visual HMI-PLC panels, including for lot traceability, operator identification, remote servicing, alerts and customised data reporting to give you full insight into your production processes.



# MAINTENANCE PACKAGES

Hosokawa Micron's Planned Maintenance packages ensure your equipment performs optimally, thus preventing costly or unnecessary production downtime.

While at your facility, Hosokawa Micron engineers will ensure your plant and operators are protected in accordance with the latest industry standards. Afterwards, a comprehensive report will be issued, which will also contain information about technology updates that will enhance the performance of the equipment, thereby optimising production processes to reduce energy bills, improve yield, ensure consistency and drive business growth to increase profitability.

# QUALIFICATION & VALIDATION SERVICE

To ensure your containment equipment operates correctly and meets critical standards, our trained engineers carry out a full range of testing and validation procedures in accordance with the latest ISO standards, including:

- > HEPA filter integrity testing
- OEL testing
- Leak testing
- > Classification of air cleanliness by particle concentration
- > IQ/OQ/PQ Qualification on site

## **CONTAINMENT TESTING**

Carried out on-site by Hosokawa Micron, in accordance with ISPE Guidelines, leak testing and Operator Exposure Level (OEL) testing enable you to benefit from our specialist containment expertise and an in-depth understanding of your containment requirements at all stages of construction.

# QUALITY-ASSURED SPARE PARTS

Our Lifecycle Team will support you by fulfilling all of your spare parts requirements.

#### **ADVANTAGES INCLUDE:**

- We carry stock of consumable spare parts used in our equipment to help minimise downtime
- > Our Spare Parts packages are carefully tailor-made for you
- We provide a full range of genuine, reliable spare parts for all of our Hosokawa-branded equipment
- > Each part undergoes a Quality Assurance Inspection

### **OPTIMISATION & UPGRADES**

Hosokawa Micron can provide expert assistance by upgrading your equipment in order to lower plant running costs, improve performance and ensure machinery is as eco-friendly as possible.

#### **OUR UPGRADING PRODUCTS AND SERVICES INCLUDE:**

- > 5D flexible or rigid containment screens
- > Energy/noise-reducing extractor fans
- > Energy-efficient LED lighting
- > Temperature Control packages
- > PIR sensors (standby mode)
- > Glove integrity test kits





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Hosokawa Micron Group has established offices and agencies across various regions worldwide. For further information, please contact Hosokawa Micron Ltd in the United Kingdom.

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