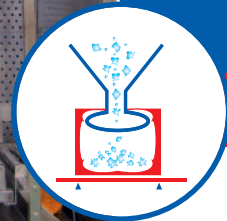
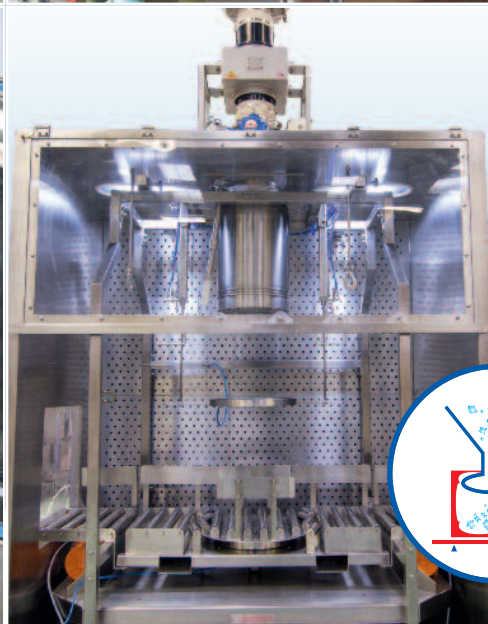
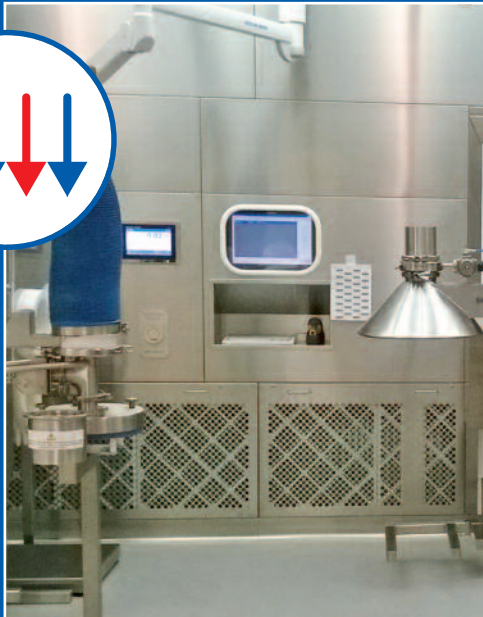
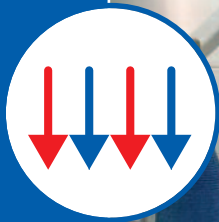


CONTAINMENT TECHNOLOGY & INTEGRATED SOLUTIONS



HOSOKAWA MICRON LTD

Hosokawa Micron Ltd is a leading pioneer in the development of containment technologies

Innovative containment solutions from the experts in powder and particle processing.

Delivering Operator Exposure Levels down to 10ng/m³ and Operator Exposure Band 6.

A single source supply of powder processing equipment and containment solutions.

Delivering integrated and bespoke solutions which exceed expectations.

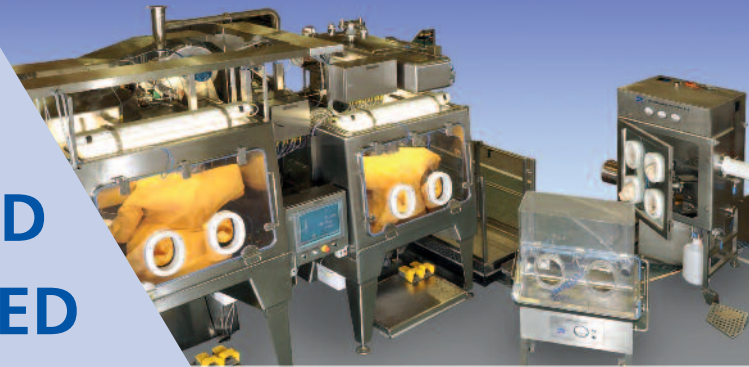
Working in close partnership with our customers, worldwide.

Customised solutions to meet your specific contained processing requirements - no matter how complex or simple.

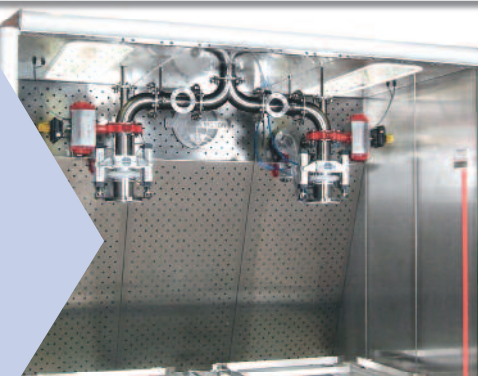


CUSTOMISED CONTAINED PROCESSING SOLUTIONS

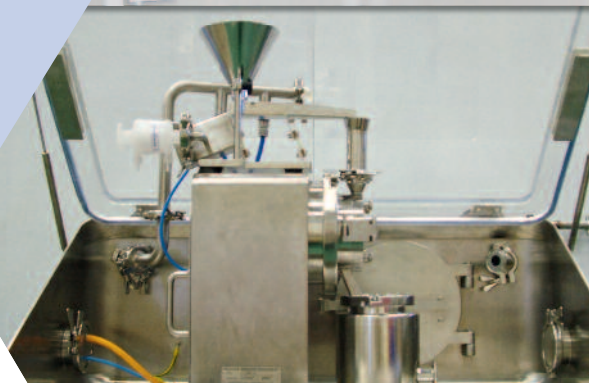
Downflow Booths



Gloveboxes and Isolators



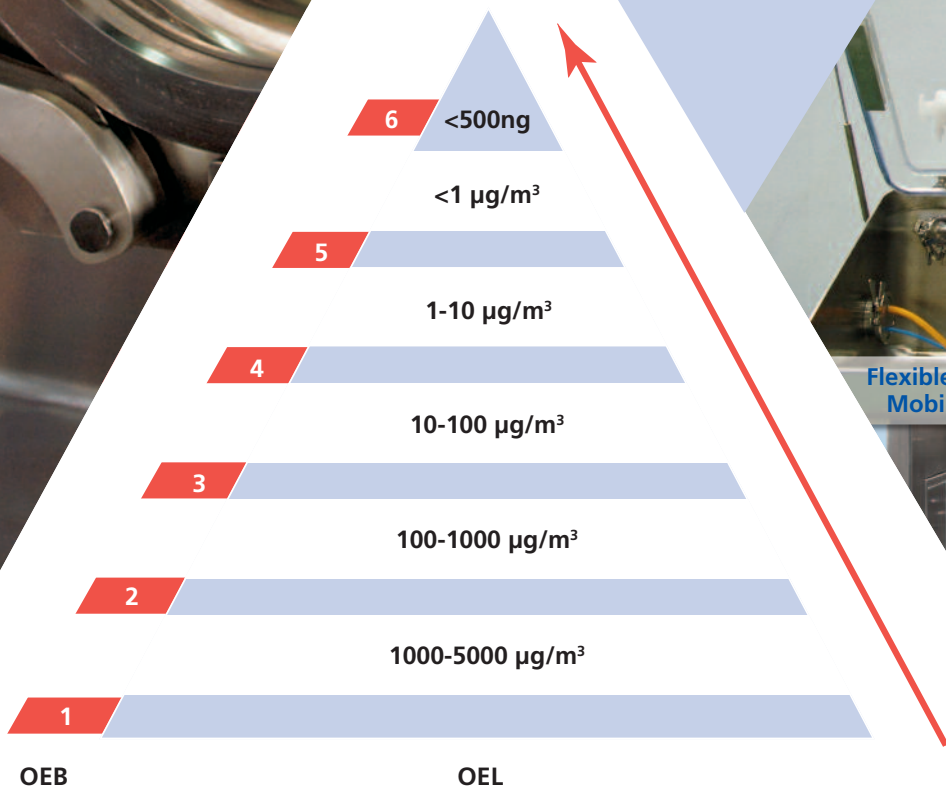
Laminar Flow Booths



Flexible Compact and
Mobile Isolators



Filling and Weighing
Systems





Downflow Booths

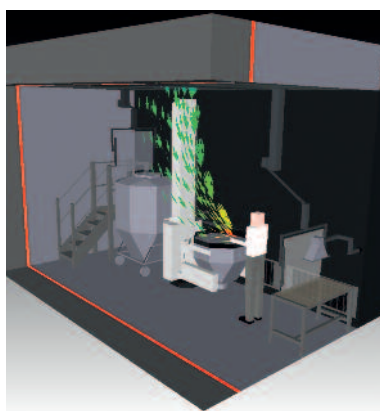
Downflow booths offer a safe working zone for the protection of operators from the harmful particulates generated during manual handling activities including sampling, dispensing, sub-division, charging and off-loading powders or solvents. Hosokawa Micron can offer an extensive range of standard and bespoke downflow booth solutions; with or without integrated equipment.

Design Advantages

- Guaranteed operator exposure levels of $<100\mu\text{g}/\text{m}^3$ (task duration), can be improved with the use of flexible or rigid high containment screens to $10\mu\text{g}/\text{m}^3$ (task duration)
- Flexible, modular build concept
- Almost limitless widths and heights and safe working depths
- Standard designs at affordable costs
- Recirculation or single pass and hybrid solutions



3D and Airflow Modelling



Computational Fluid Dynamics software shows, before the booth is built, how equipment and personnel placement can potentially compromise OELs so early design adjustments can be made. Invaluable for complex, multi-use operations.



Whisper Booth

Ideal for multi-processing areas or 'quiet zones' with low noise levels of approx 60dba



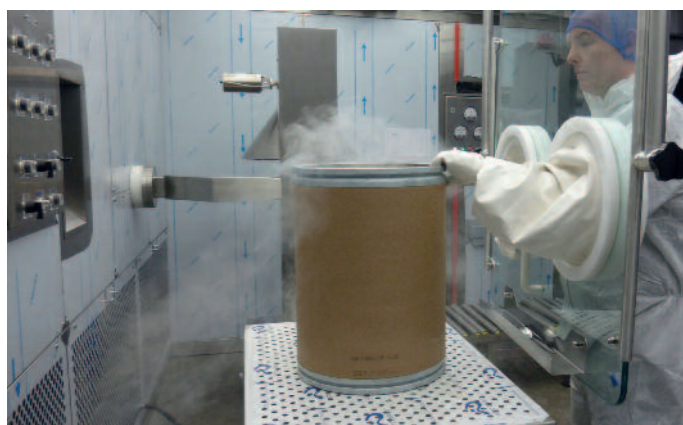
CleanGreen Booths

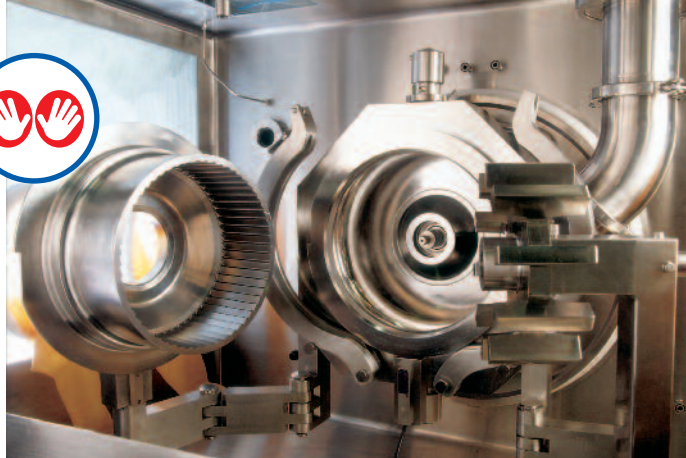
Designed for energy efficiency with high efficiency fan/motor sets, PIR controlled standby mode, LED lighting and temperature and humidity control.



Options

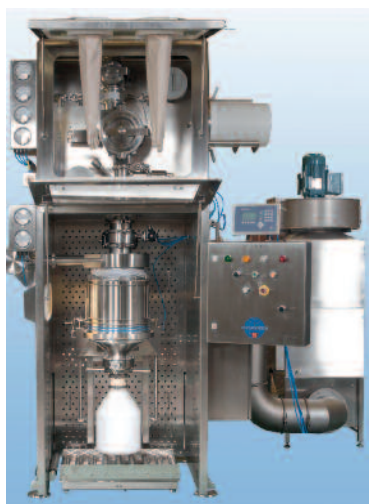
- ATEX design
- Stainless steel, powder coated mild steel or composite cleanroom construction panels
- Controlled entry and exit airlocks
- Temperature cooling/heating packages
- Multi-stage filtration, safe change availability
- High containment screen
- FAT/SAT testing, IQ/OQ





Design Advantages

- 3D modelling and full size ergonomic mock ups
- Manufactured to meet cGMP, FDA, EMA guidelines
- Designed to accommodate Hosokawa Micron or 3rd party equipment



Integrated Engineering

Hosokawa powder processing equipment can be re-designed for installation inside Gloveboxes/ Isolators for a more bespoke processing response and delivering an improved ergonomic solution.



Gloveboxes & Isolators

In response to the development of increasingly potent and potentially toxic pharmaceutical products and chemicals, Hosokawa Micron has a proven range of standard and bespoke barrier containment solutions offering both personnel and product protection.

Designed for manual and automated handling and processing, our isolators are available in single and multi-cell variants for processes including milling, micronising, dispensing, sampling and product pack-off.

Nuclear Contained Process Systems

Class 1 – leak tightness < 0.05% vol/hr

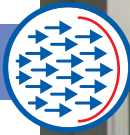
Civil Nuclear & Defence containment and process systems are designed to ensure easy de-contamination and to improve Availability, Reliability & Maintainability (ARM) of equipment including the use of through the wall drive systems.

Design Substantiation Reports (DSRs) are produced by Suitably Qualified & Experienced Personnel (SQEP) to demonstrate that the engineered design is compliant with all relevant mandatory requirements and Safety Functional Requirements (SFRs).

Completed projects include:

- Shielded Class 1 gloveboxes
- Size reduction of uranium dioxide
- Bulk powder handling & packing
- Mixers for grouts & slurries
- Milling/micronising of powders for MOX fuel
- Fume cupboards & downflow booths for explosive powder containment
- Machine tool integration into gloveboxes
- Forensics gloveboxes





Laminar Flow Booths

The Hosokawa Laminar Flow Booth's controlled, non-turbulent, filtered airflow means only clean air is in the operator's breathing zone and particles generated during processing activities are pushed away from the breathing zone.

Custom-built or in standard sizes, the ergonomic design of the Hosokawa Laminar Flow Booths allow a wide range of containers to be handled either manually or automatically and are designed for fixed or portable operation or as a standalone workstation.



Design Advantages

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

Options

- Manually or pneumatically operated doors for infeed/outfeed of containers
- Integrated operator controls
- Hazardous area controls
- CIP systems
- Container location and pneumatic eject systems



Flexible Compact Isolators

A cost effective 'plug and play', barrier containment solution that can easily be transported to where it is needed. Providing a single, contained work station or linked with other units the FCI can create a complex, multi-cell solution with individual activities contained within each unit.

Ideal for use in scientific research, biotechnology, pharmaceutical applications for laboratory analysis, micronising, drying, product transfer and sampling of high potency compounds.

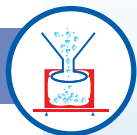
Design Advantages

- Plug and play
- Lower cost/shorter lead time alternative to all stainless steel, static isolators
- Containment levels $<1\mu\text{g}/\text{m}^3$
- Freestanding or benchtop

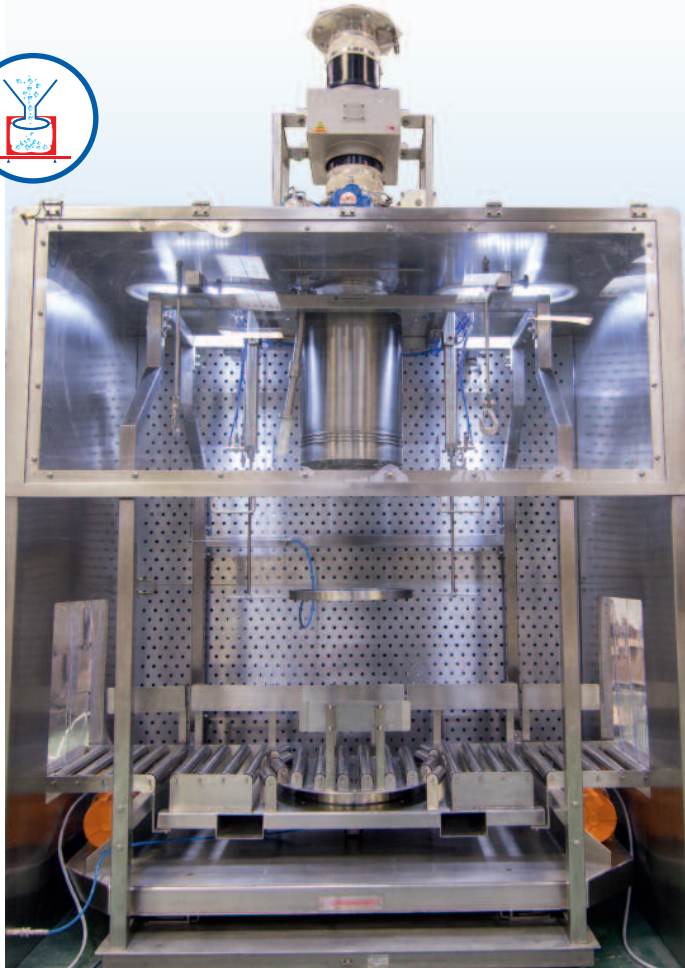
Options

- Canopy options: rigid or flexible
- Nitrogen inertion
- WIP/CIP options
- ATEX design





Filling & Weighing Systems



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

Available in standard or bespoke designs our filling and weighing systems can be designed for use in hazardous areas. They incorporate interchangeable, Stott design inflatable packing heads and integrated weigh platforms to provide automatic control of bulk and dribble filling modes.

Design Advantages

- Designed for flexible filling of a range of container sizes including charge bottles, drums with or without liners
- Internal filter and purge facilities as standard – reducing product loss and protecting HEPA filters, FIBCs and IBCs
- FDA 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).
- Interchangeable sealing heads can be changed in less than 1 minute
- Compact inward seal that does not come into contact with the product
- Outward or downward inflating seals, raise/lower solid seals to cGMP design



Filling systems can be integrated into laminar and downflow booths or isolator systems.



Options

- Gravity or motorised roller track section to assist entry and exit of filled containers
- Integrated electrical and pneumatic controls for stand-alone systems
- Manual or pneumatic platform height adjustment
- WIP/CIP systems
- Drum base vibration system
- In-line product sampler
- Various seal materials/FDA compliant
- Systems available in choice of materials - stainless steel, Hastelloy, coated mild steel

Service, Validation, Upgrades

Having selected the best equipment on the market it makes sense to protect your investment by inviting Hosokawa Micron service engineers to share their full range of expertise with your maintenance engineers. Together you can ensure your containment, processing and ancillary equipment is running at optimum efficiency and meeting critical performance standards.

Testing and Validation

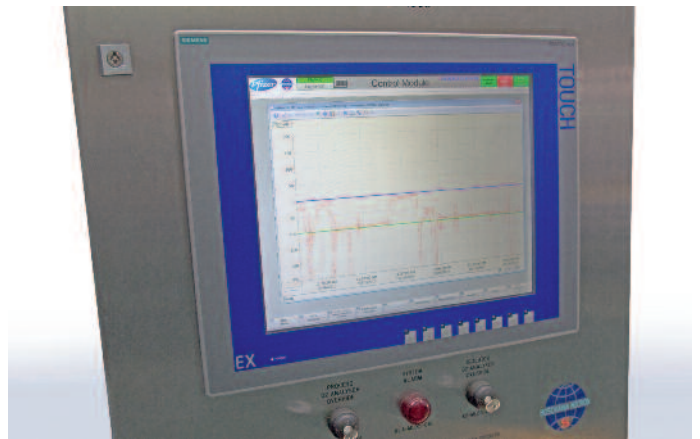
To ensure your containment equipment operates correctly and meets critical standards our trained engineers carry out a full range of testing and validation procedures including:

- HEPA filter integrity testing (ISO 146443)
- OEL testing (ISO 146441)
- Pressure testing ISO 14644 and leak testing ISO10648-2
- Airflow measurements
- Independent 3rd party testing is available to meet compliance requirements



With the support of our group company network, wherever your plant is located, Hosokawa can assist with your service requirements, including:

- Replacement parts and consumables
- Training of your engineers
- Emergency breakdown cover
- Preventative maintenance contracts



Refurbishment & Upgrades

All our containment equipment and systems are built to last. However, over time, customers may benefit from refurbishments and technology upgrades that deliver improved performance at a fraction of the cost of a new system. Upgrading options can also enable existing equipment to meet new business demands. We regularly retrofit energy efficient LED lighting, cooling/heating packs, easy change filters, CIP systems and install 5D containment screens for improved OELs.

Hosokawa Micron Ltd is a Member of the Hosokawa Micron Group, responding to global needs through emphasis on materials science and engineering.

The Hosokawa Micron Group will always be the leading global company covering the mountain range of Powder Technologies. The Group will achieve peaks of excellence in the development and commercialisation of advanced materials, process equipment and systems engineering.

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HOSOKAWA MICRON LTD

Rivington Road, Whitehouse Industrial Estate, Runcorn, Cheshire, England, WA7 3DS
Tel: +44 (0)1928 755100 • e.mail: info@hmluk.hosokawa.com • www: hosokawa.co.uk

PROCESS TECHNOLOGIES FOR TOMORROWSM