

Pharmaceutical Containment Solutions





Pure Protection for your
Product, your People and
your Business

Howorth - Pure Protection

For over 150 years, the Howorth name has been synonymous with utilising air engineering to create safe, clean and productive working environments.



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Today, this expertise in engineering clean air is fundamental to our success in providing world class containment and infection control solutions, serving the global pharmaceutical, medical and wider industrial markets. Our clients include, small businesses, blue-chip private companies, as well as the government sector.

The company's strong reputation has been earned by providing well designed, high quality goods, together with a superior level of customer service, both pre and post order.

Research and Development

As a company that prides itself in being at the forefront of technology, the continuous development of our products and services is key to our ongoing success. This is reflected in our recent investment in a new state-of-the-art Research and Development facility at our UK

head office located near Manchester, England.

US Operations

In 2008, Howorth continued its ongoing expansion by investing in highly skilled representatives around the US and South Americas.

The close relationship with Howorth and their representatives enables Howorth to better serve the American market.



Serving the Pharmaceutical Industry

As a supplier & partner to global pharma companies for many years, we understand the increasingly onerous international health & safety standards that our clients are required to work to.

Ergonomic Modeling

We offer a full prototyping service, giving our clients the assurance of seeing and working with a full-size mock-up for operational ergonomic assessment prior to the final product being manufactured. This proves invaluable when 'new' machinery has to sit alongside 'old' equipment to create a new production line or enhance levels of safety for compliance reasons.



Full Compliance with Global Regulations

As a supplier and partner to global pharma companies for many years, Howorth understands the increasingly onerous international health and safety standards that our clients are required to work to.



Our containment solutions and associated documentation meet or exceed the relevant EC GMP, FDA, ISO and other global standards. Furthermore, as an active member of the ISPE, we not only comply with ISPE Guidelines but contribute to their ongoing improvement.

Working Your Way

Our long experience of supplying solutions to the pharmaceutical and healthcare industries has enabled us to develop our internal process to meet the unique needs of our customers.

These processes include, adherence to good engineering practice, rigorous internal checking in the form of design reviews, quality control, traceability and full quality surveillance of all our sub-contractors.



In addition, our processes have been externally audited and have achieved the ISO 9001:2000 quality standard.

This is backed-up by extensive levels of documentation, including, design reviews, validation & FAT reports, IQ/OQ, certificates of conformity, process maps and IOU manuals. Howorth can also provide operating training and assist with the development of SOPs.

working in partnership with
the global pharmaceutical
industry





Downflow Containment Booths

Howorth's Downflow Containment Booths are engineered to provide high levels of personnel protection with the flexibility to carry out a multitude of process operations.

Containment by Airflow

Containment by airflow is a well proven concept taken to new levels by Howorth's air engineers. Our booths utilise a unidirectional flow of air which is passed through ceiling mounted distribution screens ensuring a controlled flow of air. This airflow can be directed to enable contaminants to be carried away from the breathing zone of operators and into low level exhaust grilles.



Depending upon the application, two main configurations are used:

- Recirculatory booths are typically used for powder operations
- Once-through booths are recommended where solvent or fume vapours are present



Flexibility

Howorth's engineers will work with you to develop an airflow containment solution that meets your exacting requirements. Our inherently flexible systems, together with our experience of equipment integration, will allow you to meet your safety needs without having to compromise on process efficiency.

Features and Options

Howorth booths not only give enhanced levels of operator protection but are fully configurable to meet the specific needs of our clients:

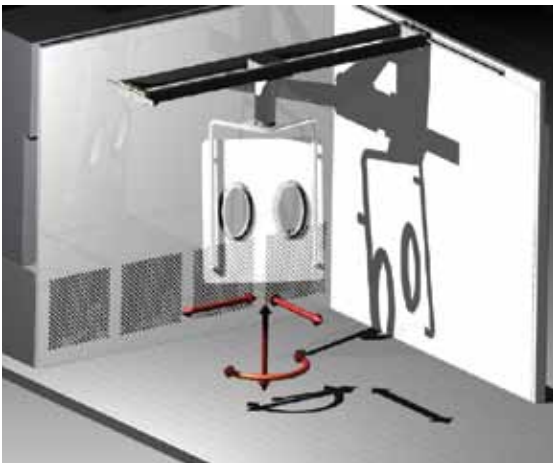
- Flexible dimensions and safe working zones
- Available in a variety of construction materials, including, 304/316L Stainless Steel and epoxy coated carbon steel
- Integrated cooling coils and other climatic systems
- A wide range of ancillary equipment, such as ventilated workbenches, integrated manipulators and drum handling systems
- Designs suitable for use in explosive environments
- Glass walls and viewing windows
- Custom filtration systems to suit each application, with options including Terminal HEPAs and Safe



High Containment Screens

Bringing a new dimension to containment with the HCS range of screens including the all new 4D High Containment Screen. Patented technology unique to Howorth*.

Howorth's High Containment Screens (HCS) are a simple but effective way of boosting the containment capabilities of any downflow booth. With our new range of screens, Howorth is now able to offer previously unattainable levels of operator protection.



Independent testing has confirmed that OEL's as low as $1 \mu\text{g}/\text{m}^3$ can be achieved. This means that for operations where an air suit or isolator were previously the only option, a downflow booth combined with a Howorth High Containment Screen is now a viable solution.

4D HCS

Howorth's new 4D HCS is our most flexible screen yet, offering four degrees of movement:

- Side to side
- Front to back
- Up and down
- Controlled rotation

Developed in collaboration with existing booth

operators, the 4D HCS offers unparalleled levels of operator flexibility, making it the ideal solution for a wide range of processes.

Retrofits and Upgrades

The benefits of our High Containment Screens are not just limited to customer's purchasing new booths. Our latest range of screens have been developed specifically to allow them to be fitted within existing booth facilities.

Whether your existing booth is a Howorth unit or supplied from another manufacturer, we are able to offer a complete turnkey retrofit or upgrade service.

- Site Survey
- Design and Manufacture
- Installation and Commissioning
- Site Acceptance Testing and Validation



* US and European Patents Pending





Barrier Isolator Systems

For a fully contained environment during active product handling, you need a solution that provides uncompromised total barrier isolation.



The safe handling of bulk chemicals and potent pharmaceutical compounds demands an environment which provides uncompromising total barrier isolation.

Howorth designs and manufactures bespoke isolators, which combine containment levels of less than $1 \mu\text{g}/\text{m}^3$ with ergonomic and maintenance efficiency.

To ensure total system integration, Howorth works in close co-operation with you, our customer. Particular attention is paid to the interface between the operator and your own process to ensure that all production and containment levels are fully achieved.

Ergonomic Mock-ups

We recommend the production of a full scale model that allows the ergonomic aspects to be addressed in addition to the optimum placement of ancillary and process equipment. Following client review, any modifications can take place with progression into manufacture.

Equipment Integration

Howorth has earned a strong reputation within the industry for our innovative integration of process equipment within barrier isolation systems. We have worked on a wide range of successful equipment integration projects, both with end users and OEMs.

Typical Isolator Applications

- Dispensing and sub-division
- Sampling
- Solids Charging
- Pack-off and heel recovery
- Chemical synthesis
- Mills
- Fluid Beds
- Granulators
- Filter Dryers



Pack-off, Process & Other Equipment

For every aspect of your operations, Howorth has containment solutions to create and maintain safe working environments.

Pack-off Heads

Designed as a primary dust containment solution for operations such as off loading and product pack-off. Howorth's pack-off heads are suitable for use with a wide range of drums, kegs, bags, boxes and intermediate bulk containers (IBCs).

Depending upon the application, we are able to offer a number of pack-off head sealing configurations including outward inflating, downward inflating and inward inflating.



To complement our range of Pack-off heads, Howorth are able to offer a variety of secondary pack-off containment products in the form of booths and isolators. By utilising a secondary containment solution, operator protection can be improved and containment levels of less than 1 $\mu\text{g}/\text{m}^3$ can be achieved.

Kilo Labs & Glassware Enclosures

Where physical protection and containment of fine glassware and kilo-lab sized reaction rigs are a requirement, our custom-built enclosures are a perfect solution.



These modular enclosures can be provided with either horizontal flow or vertical downflow systems depending upon the application. Localised flow can also be provided both inside and outside the enclosure to ensure the added protection of the operator during the loading process.

Solvent & Liquid Drum Booths

Drum booths are designed to provide low ppm containment during solvent or liquid transfer and other handling processes i.e. drum to drum transfer or drum to process reaction vessel.

Our booths are available in a range of materials including Stainless Steel or Polypropylene for added corrosion resistance.







Aftermarket Support & Servicing

We can offer you an ongoing support service over the full lifetime of our products and beyond to your future needs.



Pure protection for your product, your people and your business. For us to deliver on this promise we must ensure that our relationship goes beyond just the supply of containment products.

Installation, Commissioning and SAT

At Howorth, we understand that our products are often a small part of a much bigger picture. That's why we focus on making the installation and commissioning procedure as smooth as possible. Our experience of equipment integration, together with rigorous engineering and quality procedures, ensures that the only last minute surprise is the ease with which our solutions are fully operational.

Extensive documentation, ergonomic models and Factory Acceptance Tests (FATs) all contribute to making Site Acceptance Testing (SAT) a trouble-free formality.

Servicing and Validation

The ongoing maintenance and validation of your containment products is essential to ensuring the safety of your staff and efficiency of your processes.

As an OEM supplier we can ensure that your equipment remains in the peak condition through the supply of quality approved parts.

Furthermore our experienced Service Engineers can maintain, validate and, if required, upgrade your equipment. Ensuring that you meet the latest industry regulations and that your people, products and business receive the maximum protection.

Filtration Technology

Howorth's recent acquisition of Westbury Filtermation, one of the UK's leading independent filter companies, puts Howorth in a unique position. We are now able to offer a complete range of filter products specifically designed for use in containment systems.

This includes pre-filters, high efficiency filters, HEPA and ULPA products, each specifically engineered to meet the unique requirements of containment systems.





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