

Flexible Containment Systems For Potent Compound & Aseptic Processes



Howorth - Pure Protection

For more than 150 years the Howorth name has represented technical creativity and expertise in air engineering and its application to climatise and control the working environment.



Howorth's 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.

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.

Global Operations

In 2008, Howorth continued its ongoing expansion by investing in highly skilled representatives around the World.

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



Flexible Containment

A low cost solution for small batch sizes or for incorporating additional protection to an existing product handling operation.



The Flexible Glovebag/Isolator is a soft walled containment system that can be used as an alternative to a hard walled isolator in many applications. Flexible wall isolators offer a high degree of protection for both the operator and the product. Howorth's unique flexible approach can offer design, manufacture and delivery at an affordable price within optimum timescales.

Flexible Isolator designs are 'flexible' in many ways. They can be made to meet a range of specifications and requirements in almost any application for containment and aseptic processes. The Glovebag/Isolator may be made in unusual shapes, sizes and have multiple compartments for applications where hard sided isolators would be impractical or extremely expensive.

Lower glovebag/ isolator costs allow for 'single use' dedicated applications. This eliminates decontamination process costs and lost production time which is often associated with fixed isolator process change, cleaning and re-validation.



Cost Saving Benefits

- Cleaning validation is not necessary (if envelope is disposed of for single use)
- Reduced capital cost for small batch/campaign
- Reduced project management life cycle costs
- Reduced delivery timescales
- Quick to set-up/assemble with little or no installation required
- **Easily integrated into existing processes and equipment**
- **Units can be constructed around existing pieces of equipment or integrated with existing equipment**
- **Cross contamination risk eliminated by disposing of the enclosure**
- **Howorth will custom design and build the solution to meet with your requirements**

Flexible & Semi-Flexible Construction

The flexible containment system falls into two different areas of construction these are flexible and semi flexible.

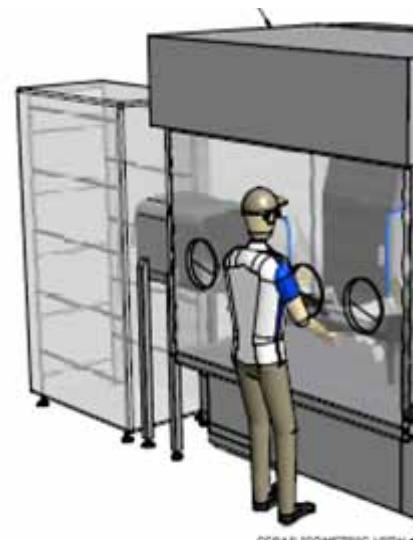


Flexible construction consists of fully welded polyurethane/PVC envelope with a simple breathable hepa filter to allow gloves and sleeves movement as well as permit envelope collapse at the end cycle ready for disposal. The envelope can be supported from modular tubular section and fittings. The envelope would be attached via bungee cord or sleeve with popper studs which is welded to the enclosure for quick and easy installation.

Semi flexible construction will allow the same flexibility as above with more robust construction. The base or sidewalls of the glovebag/ isolator will have a rigid stainless steel base tray, which can allow for process connection and equipment to penetrate through into the enclosure. The polyurethane/PVC canopy can clip or be flanged to the stainless steel base and then can be mounted in the same way to support the frame.

Our Glovebag's and Isolators are manufactured to the highest standards, seams are fully welded and corners are appropriately finished in accordance with cGMP guidelines. Features include:

- Ergonomic envelope design which will minimize operator fatigue.
- Polyurethane/PVC flexible envelopes or canopies.



- Fully welded zippers
- Single or multiple chamber options.
- Modular support frame system (if a frame is required).
- Integrated Hepa supply & exhaust systems.
- Undirection airflow canopy.
- Wet / Wash-in-place cleaning systems
- Adjustable height base systems
- Pressure control system which can be monitored by relay logic or PLC control system.
- A number of transfer system options (see below)

Howorth is pleased to be able to offer an extensive range of transfer systems. Whether our own proprietary designs or 3rd party solutions, we are sure to have a transfer solution to meet with your process, containment and ergonomic needs.



Semi Rigid Isolator

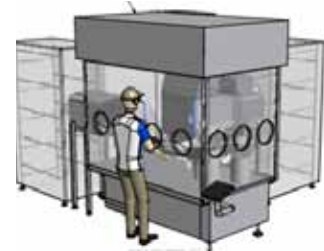
- Interlocked pass through boxes c/w inflatable seals
- Fully integrated Split Butterfly Valves (SBVs)
- Rapid Transfer Ports (RTPs) in various materials
- Automated or manual drum tippers & lifters
- Bag-in / bag-out systems
- Continuous Liner Systems

The flexible glovebag/isolator can be as simple as an atmosphere envelope with integrated filter for gloves and sleeves movement or can be maintained at a negative or positive pressure for containment or aseptic application. These envelopes can even be decontaminated using vaporized hydrogen peroxide (also known as hydrogen peroxide vapour, HPV, and by the trademarked name VHP). This is a gaseous form of hydrogen peroxide with applications at a low-temperature and uses antimicrobial gas to decontaminate enclosed areas.



Aseptic Applications

Cytotoxic and hazardous products create such a high demand for cleaning between product batches, that flexible disposable technology can increasingly be the best solution.



cGMP Design & Construction

Howorth understands the increasingly demanding international health and safety standards that our clients are required to work to. Our containment solutions and associated documentation meet or exceed the relevant cGMP, FDA, ATEX and other global standards.

Our Flexible containment Glovebag / Isolator range can provide high degree of integrity, which gives on average an OEL of less than $1\mu\text{g}/\text{m}^3$ base on 8 Hour TWA. The material transfer methods and techniques will ultimately define the systems true containment level.

Design Excellence

Howorth takes advantage of its use of advanced 3D CAD

system for concept designs and drawings which allow the operators to see realistic visual representations of the flexible glovebag/Isolator. There is the option of a full scale mock-up for complex pieces of equipment which allows the full optimum ergonomic placement of ancillary and process equipment.

Solutions to Meet Your Needs

Howorth has earned a strong reputation for working in close partnership with our clients to deliver effective solutions. We have a substantial product portfolio to call upon and the engineering resource & experience to quickly develop bespoke solutions as the need arises.



Aftermarket Support & Servicing

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



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 our levels of performance, set us apart from our competitors.

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 ensure the safety of your staff and efficiency of your processes.

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

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



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