

## PILOT PLANT / MANUFACTURING



# PROCESS SOLUTIONS

- ACTIVES & EXCIPIENTS
- BLENDING
- MILLING & GRANULATING
- DRYING & COMPRESSION
- TABLET COATING & POLISHING

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## What Happens When You Consult with Flow Sciences?

Before we begin designing, we establish these 5 criteria below. Then our design engineers begin working on a solution for your containment challenge.

### **PROCESS:**

What you are doing inside and outside of the containment enclosure that requires personnel and/or product protection.

### **CPT:**

Containment Performance Target is the customer defined level of acceptable exposure to personnel from potentially harmful materials handled during the process.

### **EQUIPMENT:**

The specific specifications and parameters of the operating machines, instruments, and hardware required to complete the process.

### **FACILITY:**

The allowances and restrictions in the designated work space required for power, installation, and operation of the containment systems and accessories.

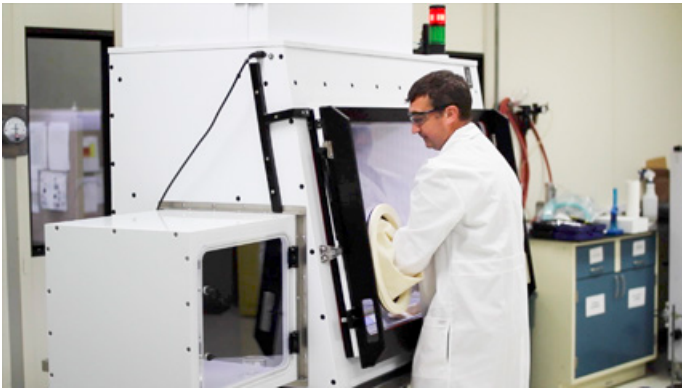
### **SCOPE:**

Defining the expectations of all parties involved in the project pertaining to budget, lead time, and complexity of the containment challenge



**VETERAN  
OWNED BUSINESS**

# FSI CULTURE

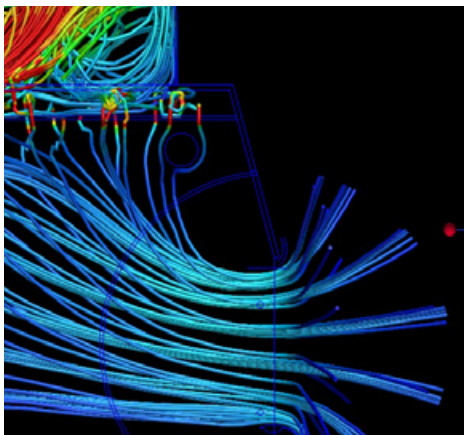


Our Highest Quality Ensures Your Excellent Results. Contract manufacturing and research of pharmaceuticals consumes an increasing percentage of your budget every year. For these companies, the ability to be effective is both a challenge and an opportunity as contracts are processed and delivered. Safety, performance and reproducibility are of the utmost importance, as the CMO or CRO rely on their equipment to manufacture consistent products and results, while keeping their personnel or product safe. At Flow Sciences, we pride ourselves in the ability to engineer solutions that contain applications properly while creating consistent results.

Versatility and flexibility are key to the most successful CDMOs and CDROs, which is why many of the top contract manufacturing and research companies in the world choose Flow Sciences as their trusted containment provider. With products ranging from convertible enclosures for different API toxicity levels to enclosures designed for specific tasks and equipment, FSI has the engineering and production capability to provide solutions throughout the entire manufacturing space.

Flow Sciences takes reproducibility seriously and we are ISO 9001:2015 certified in production quality. Every unique unit receives factory acceptance testing before leaving the facility. Our commitment to manufacture quality products results in the end user's ability to produce quality results. While there are many options available now, new enclosures and systems are being created every day to house the latest and most advanced equipment on the market. If you do not see your application or what you are looking for, please contact us.

## CONTAINMENT SOLUTIONS FROM RESEARCH TO PRODUCTION



Flow Sciences, Inc. provides engineered containment solutions from research to production. From Occupational Exposure Bands (OEB) 3 to 5, we manufacture systems to suit your application. Whether in powder manipulation where balance stability is paramount, or using specific manufacturer equipment needing containment, or operating in a temperature and humidity controlled environment, Flow Sciences keeps your personnel and/or product safe.

Flow Sciences takes reproducibility seriously and we are ISO 9001:2015 certified in production quality. Every unique unit receives factory acceptance testing before leaving the facility. Our commitment to manufacture quality products results in the end user's ability to produce quality results. While there are many options available now, new enclosures and systems are being created every day to house the latest and most advanced equipment on the market. If you do not see your application or what you are looking for, please contact us.

# PILOT PLANT / MANUFACTURING CONTAINMENT SOLUTIONS



ACTIVES & EXCIPIENTS



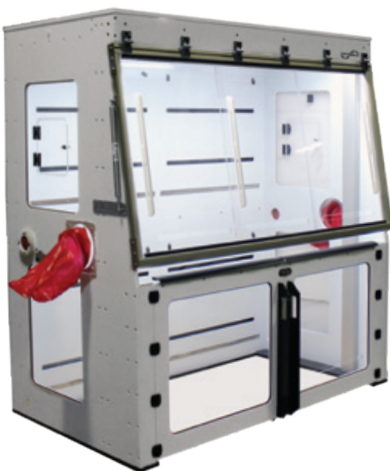
QUALITY CONTROL



BLENDING



MILLING & GRANULATION



DRYING & COMPRESSION



TABLET COATING & POLISHING





# TESTING

Flow Sciences possesses a laboratory capable of testing products for conformance to the relevant standards (ie. ASHRAE 110-2016 Tracer Gas Testing). Every unique enclosure or hood that is manufactured in the facility is tested to relevant standards to ensure quality and performance to the ISO 9001:2015 standard.

Additionally, the facility can be used to perform further testing, using surrogate materials to determine expected enclosure containment capabilities. This factory acceptance testing using surrogate materials is often accompanied by a third party industrial hygiene group, as well as the customer. This helps to replicate the end process exactly, and also to suggest SOPs and GLPs for best use of the equipment.

## BULK POWDER HYBRID ISOLATOR

Modular Hybrid Isolator with Dual Bag-In/Bag-Out HEPA filtration designed for weighing highly toxic powder APIs with balances and other processing equipment. Draftshield fitted with four 8" glove ports is designed with airfoils to ensure laminar airflow across the work surface. Draft Shield can be removed and the dual speed fan will automatically adjust the power to maintain containment at the face opening. Rear plenums and top-mounted fans also work to maintain laminar airflow across the work surface. Chemically resistant Black Phenolic base incorporates 20" cutout for bulk powder processing. Constructed with acrylic which allows for optimum ambient light transmission while built-in LED system provides additional lighting when necessary.



## DRUM LIFT BULK POWDER ENCLOSURE

Bulk Powder enclosure with side mount EHS-Now Drum Lift System. Unit features top-mounted BIBO (Bag-In/Bag-Out) dual HEPA filtration and is designed for personnel protection while working with powder substances. Unit designed to contain balance application. Also features waste chute. Size: 96" External Width, 36" External Depth, 26" Interior Height



# BULK POWDER VENTED ENCLOSURE

Bulk Powder Vented Enclosure designed to provide personnel protection while working with powder substances. Pictured unit is designed specifically for a Hicoflex Disposable Containment System by GEA. The enclosure features include antistatic acrylic superstructure, hinged door style, acrylic viewing panels, LED lighting, 20" bulk powder cutout with cover, BIBO (Bag-In/Bag-Out) dual HEPA filtration, velocity alarm, right side waste chute, left side blanked optional pass through port, 2" sanitary valve, reducing coupling, tri-clover clamp with gasket and cap, and 316 stainless steel cart. Acrylic viewing panels and LED lighting maximize lighting across the workspace. Alarm mount and printer stand optional. Size: 72" Exterior Width, 30" Exterior Depth, 27" Interior Height



# STAINLESS STEEL BULK POWDER HOOD

Stainless steel hybrid isolator with pass through and dual, BIBO (Bag-In/Bag-Out) dual HEPA filtration for personnel protection, designed to contain balance for work with powder substances. The unit features a stainless base, with glass viewing panels, and hinged door. Unit also features a 20" bulk powder cutout and built in LED lighting. Size: 67" External Width, 31" External Depth, 30" Interior Height

## MALVERN MASTERSIZER 3000 SYSTEM

Malvern Mastersizer 3000 with Aero S and Hydro MV Enclosure designed to provide personnel protection while working with powder substances. The enclosure features include polypropylene frame, acrylic panels, black phenolic base, top mount fan, HEPA filtration, sliding sash, side access doors, iris ports on both sides, minihelic gauge, and a white steel cart with cover panels and doors that docks into enclosure. Cart is fitted with lock-down casters. Acrylic viewing panels and LED lighting maximize lighting across the workspace. Size: 36" Exterior Width, 40" Exterior Depth, 36" Interior Height



## PARTICLE ANALYSIS SUITE

Dual section Balance enclosure with Bag in Bag out filtration for containment of  $<100\text{ng}/\text{m}^3$  during vacuum filter change. This unit is designed to be compatible with compressed air cleaning system and lower section to house Nilfisk Vacuum unit. Enclosure for Sympatec HELOS/BF : This enclosure houses a Sympatec - for Lazer Diffraction Particle Analysis. The Lower Section will allow a Midas to sit on shelf outside of containment. Size: 206" Exterior Width, 48" Exterior Depth, 100" Exterior Height



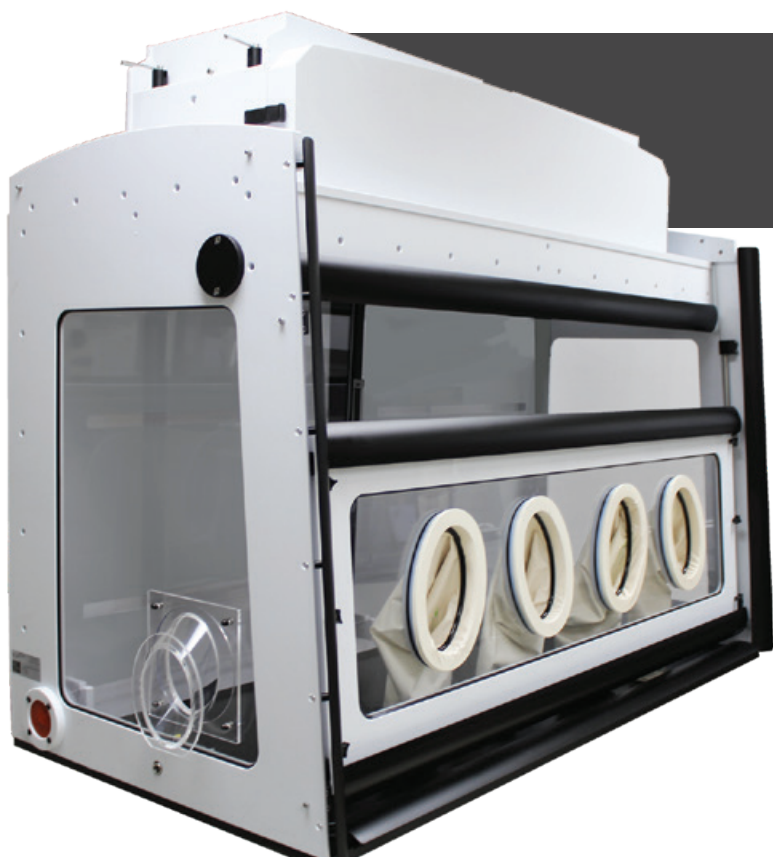
## SYMPATEC INHALER 2000 ENCLOSURE



Sympatec Inhaler 2000 Enclosure designed to provide personnel protection working with powder substances. Designed specifically for use with a Sympatec Inhaler 2000. This enclosure features include a polypropylene superstructure, removable sliding sash, dished black phenolic base with base cutout 37.25" W x 36" D, BIBO (Bag-In/Bag-Out) dual HEPA filtration, access doors on both sides, left side waste chute, minihelic gauge, 4x right side iris ports, monitor mount, B.A.S. current monitoring system with velocity alarm, ADA lift table with lock-down casters, cart for Sympatec Inhaler 2000 loading/unloading, and acrylic viewing panels. Acrylic viewing panels and LED lighting maximize lighting across the workspace. Size: 62" Exterior Width, 49" Exterior Depth, 36" Interior Height



## MAXIBLEND V-BLENDER SYSTEM



Hybrid isolator design with dual, BIBO (Bag-In/Bag-Out) dual HEPA filtration to maximize personnel protection while working with powder/aerosol application. The enclosure features a sliding sash door with black phenolic base, polypropylene structure, and acrylic sides. Enclosure is also equipped with built-in LED lighting system that can be adjusted to provide additional light for viewing and working with application. Designed to contain the Malvern Spraytech. Size: 72" Exterior Width, 34" Exterior Depth, 39" Interior Height

## SIEVING SUITE

Sieving Suite Hybrid Isolator designed to house Retsch AS-200 TAP Sieve Shaker and Hirschmann Laborgeräte Jolting Volumeter STAV-II with Water bath cart. Airfoils and plenums coupled with a BIBO (Bag-In/Bag-Out) dual HEPA filtration system control airflow across the workstation and maximize personnel protection while working with powder APIs. Stainless steel construction with inset acrylic paneling allows for ambient light transmission. Size: 109" External Width, 36" External Depth, 29" Interior Height



## VORTI-SIV BULK POWDER ENCLOSURE

Vorti-Siv Bulk Powder Station with dual, BIBO (Bag-In/Bag-Out) dual HEPA filtration designed to house a VORTI-SIV® RBF-12 Small Batch Sieving Machine. Enclosure equipped with stainless steel lift cart and fitted with 20" bulk powder cutout for loading bulk powder APIs into Sieving Station. Hinged front and lower doors allow for loading/unloading of equipment and samples. Airfoils, rear plenums, and top-mounted fans maintain laminar airflow across the workspace and optimum face velocity to ensure full protection from exposure to hazardous powder APIs. Polypropylene enclosure fitted with acrylic panels and built-in LED system to provide both ambient and additional lighting. Size: 95" Exterior Width, 62" Exterior Depth, 62" Interior Height



## MAXIBLEND V-BLENDER SYSTEM

Enclosure built for personnel protection and containment of Maxiblend V-Blender while loading, sampling, and unloading powder substances. Enclosure fitted with single HEPA filter and dual-speed, top-mounted fan with dual speed to accommodate operations / containment and cleaning. Stainless steel sink in base contains sanitary fitting for drain. Additional cleaning features include an interiorly mounted misting wand and vacuum ports on both sides of enclosure. Clean in Place CIP Wand and hose installed for misting inside of the enclosure. Size: 69" External Width, 36" External Depth, 36" Interior Height



## SENTRONIC SENTRO BLENDER ENCLOSURE

Sliding sash and polypropylene construction allow for versatility and protection while working with a Sentronic Sentro Blender, a blend system for NIR method development using the SentroPAT BU TL system. The enclosure has a sliding sash for ease of equipment loading and operation. LED is included inside of enclosure to illuminate the work surface for the optional process view. Size: 47.75" External Width, 44" External Depth, 42.4" Interior Height

## FREWITT FREDRIVE MILL ENCLOSURE

Fluid Bed Dryer enclosure designed to maximize personnel protection. Top Mounted HEPA Unit features a complicated structure with aluminum frame and removable acrylic panels and hinged doors to allow enclosure to contain Freund Vector VFC-LAB 1 application while not limiting operator access or protection. Iris port on the right of enclosure allows additional operator access. Unit equipped with mesh-top fan with HEPA filtration. Clean in Place CIP Wand and hose installed for misting inside of the enclosure. Size: 43" External Width, 49" External Depth, 50" Interior Height

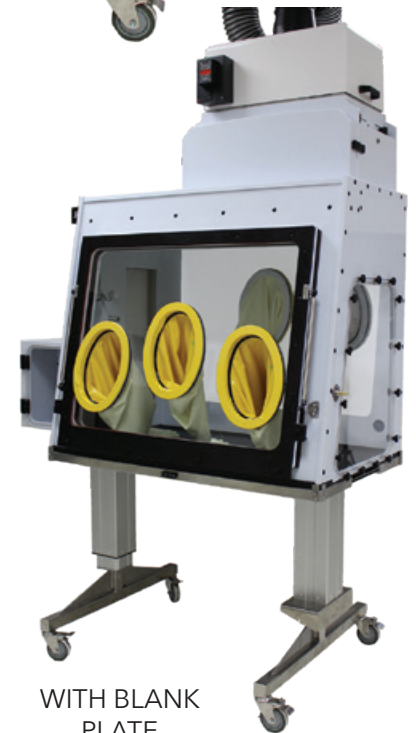


## QUADRO COMIL 197S MILLING ENCLOSURE

Quadro Comil 197S Milling Enclosure designed to provide personnel protection while working with powder substances. Specifically designed for using the Quadro Comil 197S. The enclosure features include polypropylene superstructure, sliding sash door style, top mount fans, BIBO (Bag-In/Bag-Out) HEPA filtration, right side waste chute, and dished black phenolic base. Acrylic viewing panels maximize lighting across the workspace. Size: 60" Exterior Width, 40" Exterior Depth, 70" Interior Height

## FITZMILL L1A & QUADRO COMIL GLOVEBOX

Negative pressure unit designed to contain Fitzmill L1A or Quadro Comil U5 R&D mills for operator protection while working with powder substances. Enclosure equipped with pass through interlocking chamber for loading and unloading materials on left side of unit as well as five 10" glove ports on front and back of enclosure for working with application. Enclosure equipped with top-mount BIBO (Bag-In/Bag-Out) HEPA filtration. Features stainless steel base, polypropylene structure, and acrylic sides. Clean in Place CIP Wand and hose installed for misting inside of the enclosure. Size: 60" External Width, 30" External Depth, 36" Interior Height



## FLUID BED DRYER ENCLOSURE

Fluid Bed Dryer enclosure designed to maximize personnel protection. Top Mounted HEPA Unit features a complicated structure with aluminum frame and removable acrylic panels and hinged doors to allow enclosure to contain Freund Vector VFC-LAB 1 application while not limiting operator access or protection. Iris port on the right side of enclosure allows additional operator access with additional access doors on left of unit. Unit equipped with BIBO (Bag-In/Bag-Out) dual HEPA filtration. Clean in Place CIP Wand and hose installed for misting inside of the enclosure. Size: 43" External Width, 49" External Depth, 50" Interior Height



## POWDER PROCESS MULTI-TASK ENCLOSURE

Powder Multitasking Enclosure designed to provide personnel protection while working with powder substances. Designed for using a bed dryer, granulator, comil, and a carver press. The enclosure features include polypropylene superstructure, acrylic viewing panels, 2x hinged doors, access doors on both sides, and waste chutes on both sides. LED lighting and acrylic viewing panels maximize lighting across the workspace. Size: 72" Exterior Width, 42" Exterior Depth, 74" Interior Height



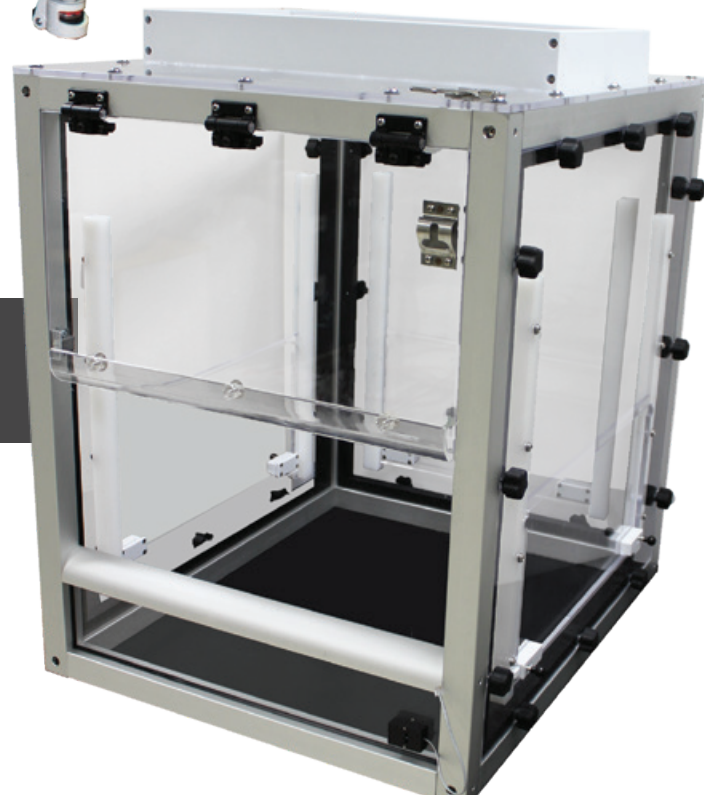


## RIVA MINIPRESS MII ENCLOSURE

Riva Minipress II Enclosure designed to provide personnel protection while working with powder substances using a Riva Minipress II. The enclosure features include polypropylene frame, acrylic panels, black phenolic base, sliding sash, top mount fan, HEPA filtration, access doors on both sides, LED light kit, iris ports on both sides, enclosure table and travel cart with casters for Diosna P1-6 Granulator. Acrylic viewing panels and LED light kit maximize lighting across the workspace. Size: 52" Exterior Width, 35" Exterior Depth, 39" Interior Height

## JMCO TABLET PRESS ENCLOSURE

Enclosure designed for containing powder during operation of the JMCO Tablet Press. Unit features top-mounted, mesh fan with single-HEPA filtration. Designed with an aluminum frame, acrylic sides, and hinged front door for accessing tablet press. Size: 28" Exterior Width, 34" Exterior Depth, 34" Interior Height

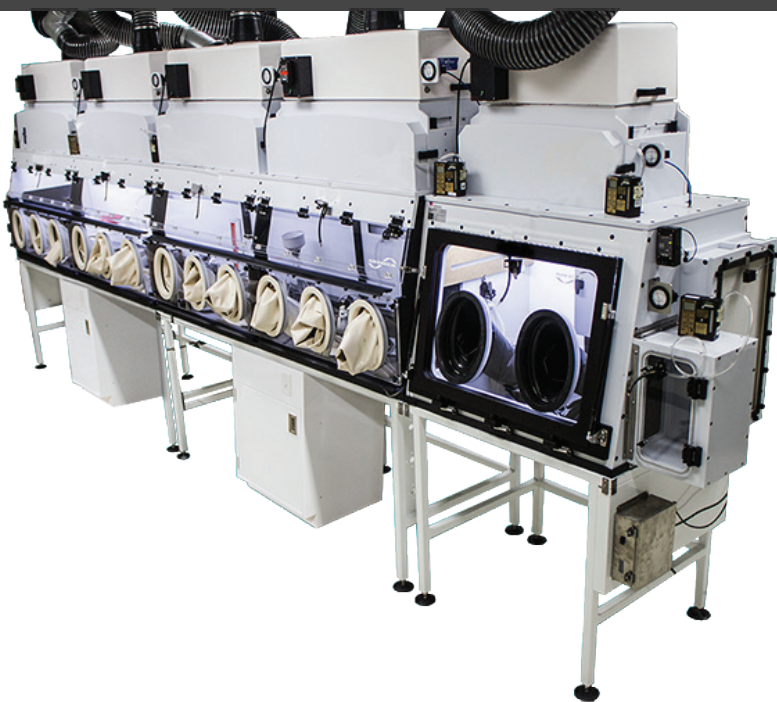


## MEMMERT VO 200 VACUUM OVEN ENCLOSURE

Memmert VO 200 Vacuum Oven Enclosure designed to provide personnel protection while working with powder substances. Enclosure features include polypropylene superstructure, black phenolic base, acrylic viewing panels, hinged door style, BIBO (Bag-In/Bag-Out) dual HEPA filtration, top mount fan, Go/No Go Red and Green Signal Light, removable draft shield with 2x 8" oval glove ports, integrated alarm, LED lighting, vent kit, thimble connection, right side pass through with interlock doors, and right side iris port. LED lighting and Acrylic viewing panels maximize lighting across the workspace. Enclosure Dimensions: 34" Exterior Width, 34" Exterior Depth, 33" Interior



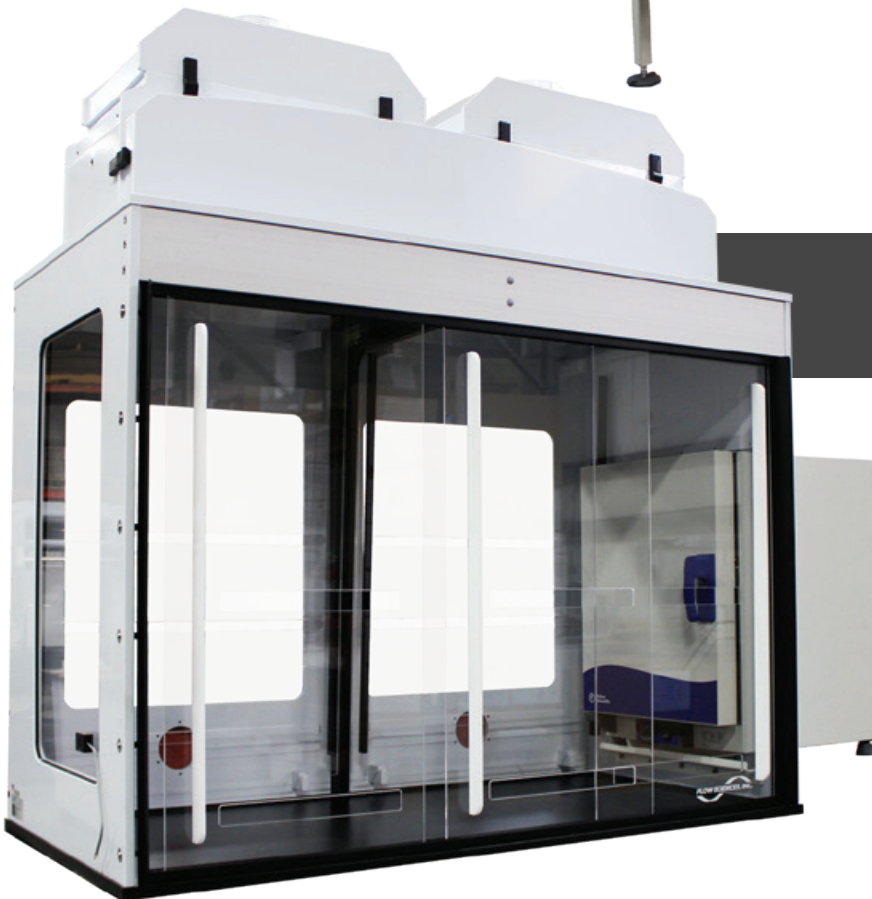
## API PROCESS DEVELOPMENT SYSTEM



API Process Development System designed to provide personnel and product protection while working with powder and liquid substances. Designed to house a Mettler Toledo Easy Max 102, Vacuum Oven, and IKA LR 1000. System features include acrylic superstructure for Isolators, polypropylene superstructure for Glovebox Workstation with clear opening pass throughs on left and right side, inlet HEPA filtration, black phenolic base, acrylic viewing panels, hinged door style, BIBO (Bag-In/Bag-Out) dual HEPA filtration, top mount fan, vent kit, 5x thimble connections, acrylic left side pass through, polypropylene right side pass through, removable draft shields with 12 x 8" oval glove ports on isolators, 2x 10" glove ports on glovebox, minihelic gauges, LED interior lighting, 6" solid waste port with continuous liner, 3x tables, 2x vacuum pump cabinets with power switches, and main electrical box for fans and on/off switch for lighting. LED lighting and Acrylic viewing panels maximize lighting across the workspace. Enclosure Dimensions: 252" Exterior Width, 30" Exterior Depth, 101" Exterior Height

## LINDBERG/BUE M VACUUM OVEN HOOD

For containing vacuum oven where pressure and heat must be controlled for drying, curing, vacuum embedding, and plating applications. Enclosure features an aluminum frame, black phenolic base, two Ezi-Dock systems, and acrylic walls with access door for viewing and working with application. Dual top-mount filter and fan with BIBO and alarm system for monitoring laminar flow. Size: 78" Exterior Width, 50" Exterior Depth, 27" Interior Height



## SMALL OVEN AND FTIR ENCLOSURE

Small Oven and FTIR Enclosure designed for specifically for a ThermoFisher Heratherm™ General Protocol Mechanical Convection oven with specifications of 22.2" W x 25.2" D x 32.3" H and FTIR (Fourier Transform Infrared Spectroscopy) equipment with specifications of 15" W x 15" D x 8" H. Features include a vent kit with Bag-In/Bag-Out filtration, Dual HEPA filters, a black phenolic base, removable sliding doors, and acrylic panels. 2 minihelic gauges monitor filter status and face velocity. Acrylic viewing panels maximize lighting across the workspace. Size: 64" Exterior Width, 32" Exterior Depth, 45" Interior Height

## CARVER PRESS & RPA CUTTER ENCLOSURE

Enclosure designed to maximize personnel protection during dye preparation and sample cutting operation. Unit built to fit multiple instruments: balance, guillotine cutter, sample cutter, and hydraulic press curer while also providing equipment stability with a bolt-down on the base. Designed so that operator can complete multi-stage application with access to multiple devices without removing hands from the enclosure during the process. Enclosure features hinged door, aluminum frame with acrylic sides, and grey trespas base. Top-mount fan and HEPA filtration system. Size: 100" Exterior Width, 40" Exterior Depth, 35" Interior Height



## STAINLESS STEEL TABLET PRESS ENCLOSURE

Stainless steel integrated containment solution for Huxley Bertram HB-100 model tablet press simulator. Unit designed to enclose API loading, die punch, actuator, and 50-slot carousel.  $\frac{3}{4}$ " acrylic front door fitted with inflatable seal to ensure operator safety as well as (4) 8 inch glove ports.. Unit equipped with lateral flow fan, dual-HEPA filtration with BIBO option, and thimble connection to house exhaust.

Size: 82" External Width, 52" External Depth, 29" Interior Height

# KRAEMER DEDUSTER ENCLOSURE

Enclosure designed to contain Kraemer KD7030-1600 Deduster and Hopper. Top-mounted HEPA filtration system maximizes personnel protection while sorting and processing powder tablets. Access port and hinged front door allow operator to easily load tablets into application via a chute in the base of the enclosure. Unit features Black Phenolic base to contain potential spills and acrylic sides with LED light for added visibility. Size: 43" External Width, 31" External Depth, 26" Interior Height



# PERFORMANCE

Performance is paramount in the safety industry, and through consistent quality design and expert manufacturing, Flow Sciences' units perform. With surrogate powder testing both in our facility as factory acceptance testing and at the customer facility as site acceptance testing, Flow Sciences consistently exceeds our customers' expectations with containment targets and goals.



## POLYPROPYLENE BULK POWDER ENCLOSURE

Containment Target :  $40 \mu\text{g}/\text{m}^3$

**Result :  $3.82 \mu\text{g}/\text{m}^3$**

Equipment : Balance, Scoops

Operation : Weighing, Bulk Powder Dispensing

Test : Lactose - 3 x 25kg

VORTI-SIV BULK POWDER  
Containment Target :  $19 \mu\text{g}/\text{m}^3$

**Result :  $0.307 \mu\text{g}/\text{m}^3$**

Equipment : Sieves, Balances  
Operation : Sieving / Weighing

Test : Lactose - 7kg



## N15 WEIGHT SORTING ENCLOSURE

Containment Target :  $50 \text{ng}/\text{m}^3$

**Result : Non-Detect**

Equipment : Trays

Operation : Pill Sorting

Test : Naproxen Sodium - 3 x 400 pills (220g)



### HIGH POTENCY API PREP SYSTEM

Containment Target :  $.200 \text{ ng/m}^3$

**Result :  $9 \text{ ng/m}^3$**

Equipment : Balance, Mortar & Pestle

Operation : Weighing, Grinding

Test : Lactose -  $3 \times 500\text{g}$

### PARTICLE ANALYSIS SUITE

Containment Target :  $100 \text{ ng/m}^3$

**Result :  $8 \text{ ng/m}^3$**

Equipment : Nilfisk, Sympatek

Operation : Sympatec Simulation, Cleaning

Test : Naproxen Sodium -  $30 \times 0.1\text{g}$



### CYTOTOXIC DRUG DEVELOPMENT GLOVEBOX

Containment Target :  $5 \text{ ng/m}^3$

**Result :  $0.12 \text{ ng/m}^3$**

Equipment : Balance

Operation : Weighing, Dissolution

Test : Naproxen Sodium -  $3 \times 10\text{g}$

### HIGH POTENCY GLOVEBOX SYSTEM

Containment Target :  $50 \text{ ng/m}^3$

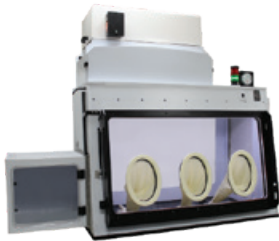
**Result :  $.4 \text{ ng/m}^3$**

Equipment : Balances

Operation : Weighing / Transferring

Test : Naproxen Sodium -  $3 \times 500\text{g}$





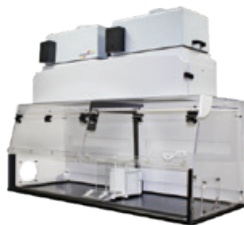
## GLOVEBOX WORKSTATION

- DESIGNED FOR WORK WITH ANTI-CANCER DRUG CONJUGATE PROCESSING AND OTHER SENSITIVE APPLICATIONS
- HEPA INLET PROVIDES INTERIOR LAMINAR AIRFLOW THAT MEETS OR EXCEEDS ISO 5 ENVIRONMENT



## HYBRID ISOLATOR

- ISOLATOR CONTAINMENT LEVELS FOR A FRACTION OF THE COST
- FOR APPLICATIONS THAT REQUIRE CONTAINMENT OF LESS THAN 50 ng/m<sup>3</sup>



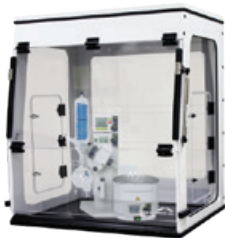
## VENTED ENCLOSURE / CLASS I BSC

- AVAILABLE IN MANY EXHAUST CONFIGURATIONS WITH SINGLE 4" HEPA FILTER OR DUAL 4" HEPA FILTERS WITH BAG IN / BAG OUT FILTER CHANGE TECHNOLOGY
- REPRODUCIBILITY AND ACCURACY OF WEIGHING IS ACHIEVED BY ENGINEERING CONTROLS THAT CREATE LAMINAR AIRFLOW



## BULK POWDER CLASS I BSC

- MOST EFFECTIVE AND EFFICIENT CONTAINMENT FOR BULK POWDER APPLICATIONS AND LARGE DRUM LOADING AND UNLOADING
- PREVENT LOSS OF CONTAINMENT WITH THE 3 MEMBRANE SAFETY SYSTEM FOR SECURING THE DRUM INTO THE INSIDE OF THE ENCLOSURE



## LEV III - LOCAL EXHAUST VENTILATION

- SAVE ENERGY AND LAB SPACE BY MOVING PROCESS APPLICATIONS OUT OF FUME HOODS.
- MOST EFFECTIVE AND EFFICIENT CONTAINMENT FOR FLASH CHROMATOGRAPHY, ROTOVAPS, AND MORE.



## SAF T FLOW™ CHEMICAL FUME HOOD

- OVERLAPPING SASH BYPASS PROVIDES BETTER CONTAINMENT AND DOES NOT REQUIRE CHANGES IF VAV IS INSTALLED
- SAVE OVER 60% OF ENERGY WITH THE SAF T FLOW™ FUME HOOD SERIES



## NITROGENEMA

- ACHIEVE AND MAINTAIN LOW HUMIDITY (RH%) OR OXYGEN LEVELS (O<sup>2</sup>%)
- HEPA FILTRATION TO HOUSE EXHAUST WITH ONE WAY CHECK VALVE





## CASE STUDY: TABLETING SUITE

Bulk powders are dispensed in aliquots and transferred to a high shear granulator, fluid bed dryer, and blender. The process concludes in the final enclosure containing the tablet press. The two larger enclosures utilize interchangeable carts to allow for other pieces of equipment to be accommodated as desired. Units include dual Bag In/Bag Out HEPA filtration for maximum containment. Surrogate sampling showed containment results of 1 to 5 mg/m<sup>3</sup>.



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STANDARD ENCLOSURES



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FSI ADVANTAGE



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WHITE PAPERS



Flow Sciences' team of industrial engineers design workstations and enclosures that reduce product contamination and maximize protection for professionals who work with toxic substances and uncertain risks. All of our products are engineered and manufactured at our corporate headquarters in Leland, NC and are backed by our sophisticated design process and award-winning excellence in engineering, including 11 U.S. Government patents. We have worked with pharmaceutical companies, research and development laboratories, manufacturing, and production facilities for 30 years. Our task-specific designs are dynamic solutions that are adaptable to our clients' workflow and specific needs.

Flow Sciences was one of the first companies in the U.S. to use computational fluid dynamics (CFD) in drafting our enclosures to ensure optimum airflow. Our engineers use CFD algorithms to simulate fluid flows and interactions within contained spaces. This enables us to predict and control airflow through design, which we then test in our state-of-the-art laboratory. Working closely with our clients to mimic real-world applications, we develop testing protocols based on the intended use of our enclosures and measure them against industry-accepted standards to ensure proper containment. We have designed, manufactured, and tested over 13,000 enclosures, generating a wealth of data on situational flow dynamics, which allows us to control for consistency, safety, efficacy, and overall quality.



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