

# Containment



POWDER SYSTEMS LIMITED



## **POWDER SYSTEMS LIMITED**

[www.powdersystems.com](http://www.powdersystems.com)

PSL is an international manufacturer of filtration, drying and high containment solutions. We have been supporting pharmaceutical, biopharmaceutical, chemical and laboratory industries since 1989.

Our experienced engineering teams work closely with our in-house chemists to accelerate process development and create the most suitable and ergonomic solutions.

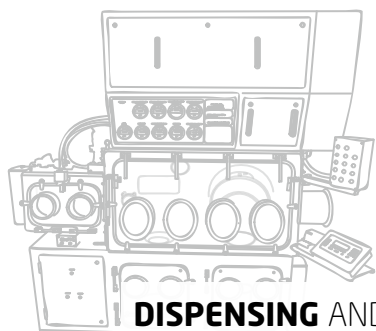
PSL's established supply chain management ensures all components, sourced from across the globe, are of the highest quality and value. This enables market savings to be passed directly onto our customers.

## **OUR GLOBAL OFFICE BASE**

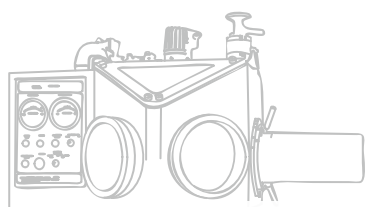
PSL continues to increase its number of global offices, agents and distributors to aid the smooth distribution of its equipment to any part of the world.



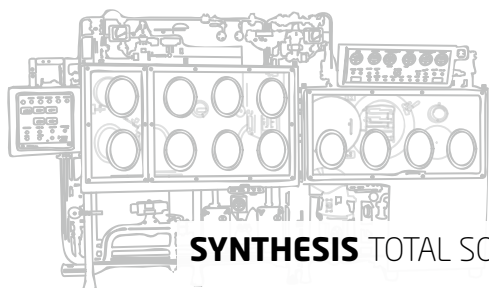
# PSL HIGH CONTAINMENT FULL PROCESS SOLUTIONS



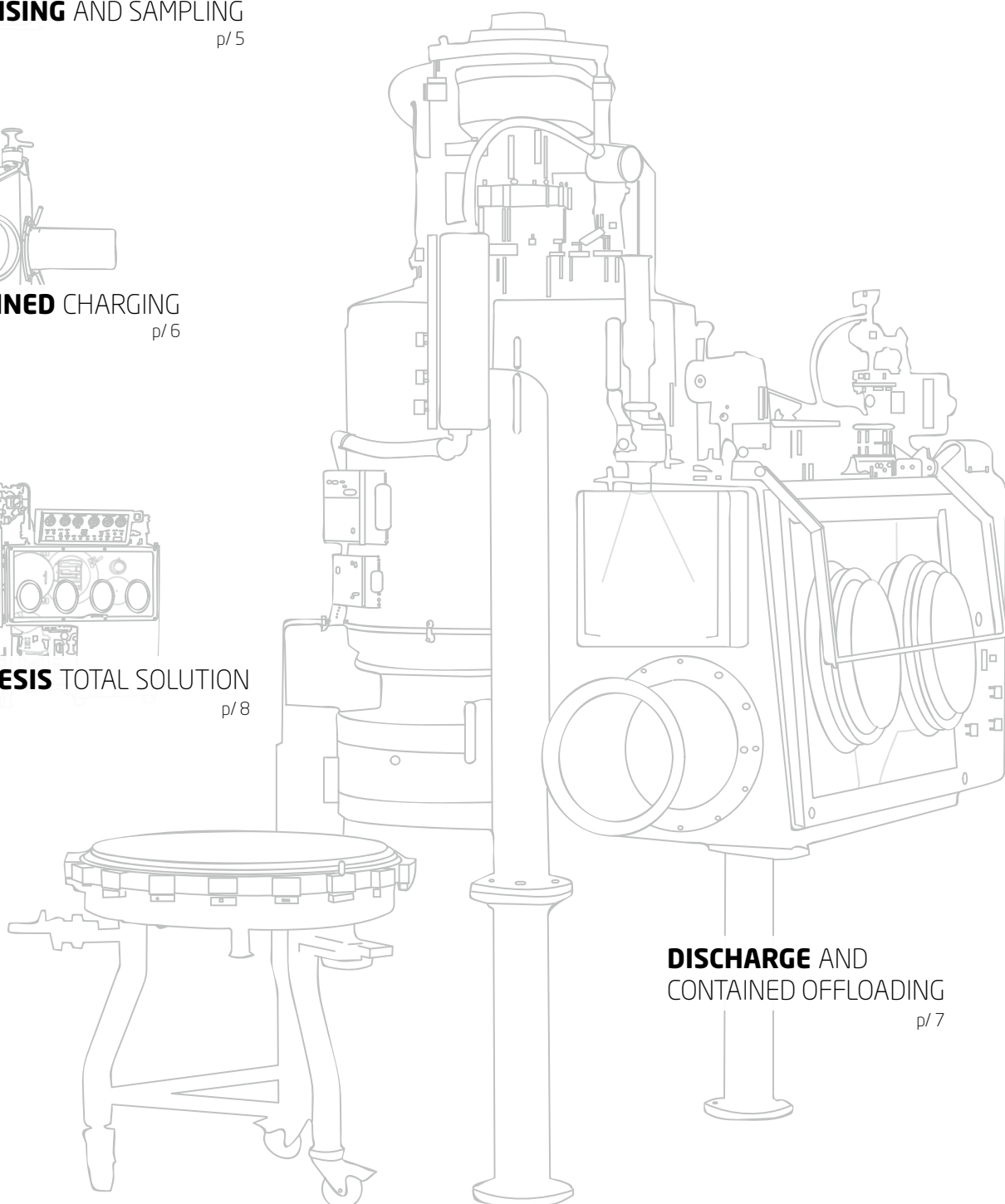
**DISPENSING** AND SAMPLING  
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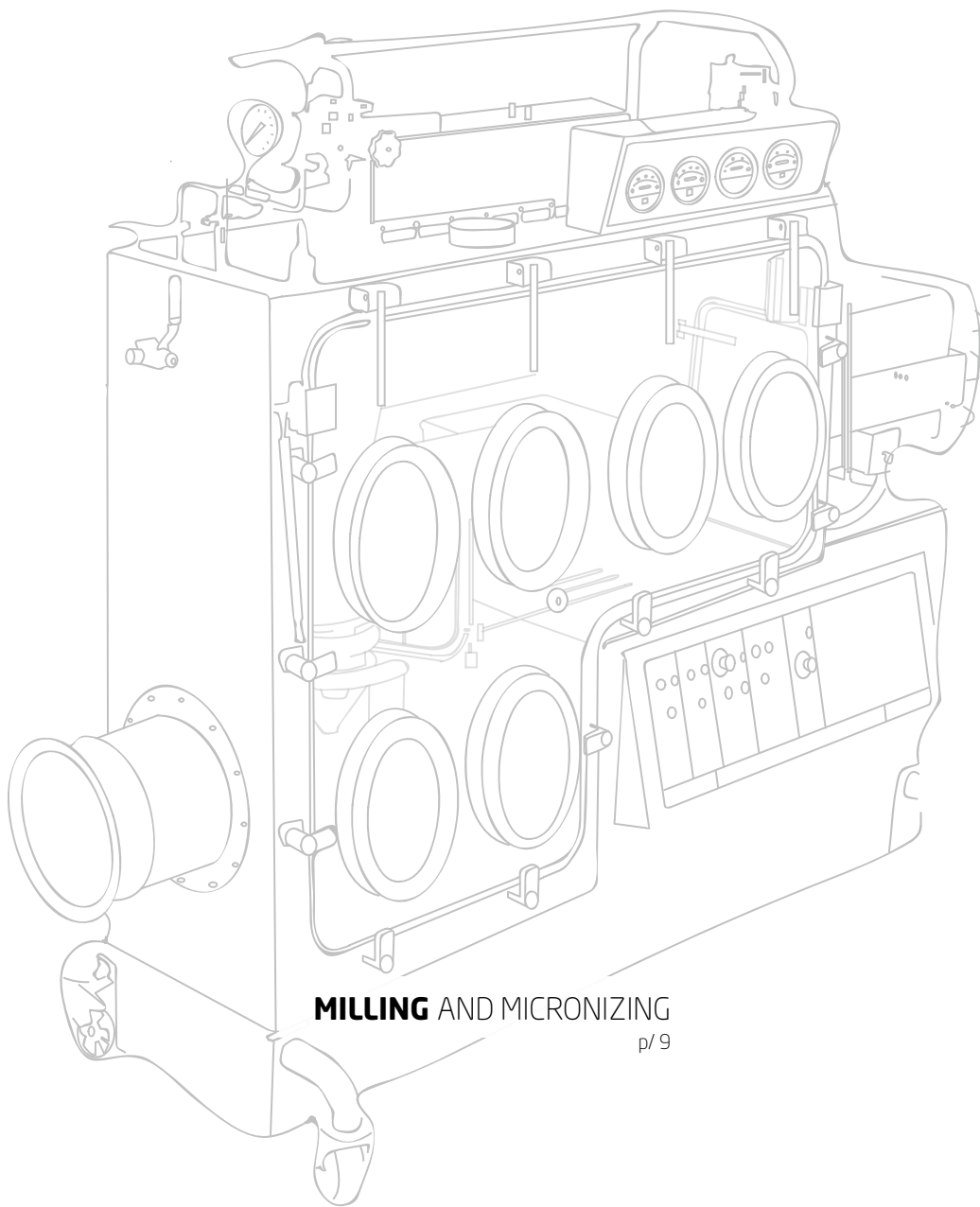
**CONTAINED** CHARGING  
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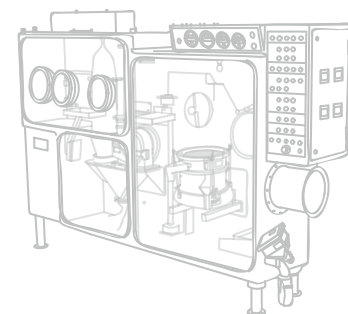
**SYNTHESIS** TOTAL SOLUTION  
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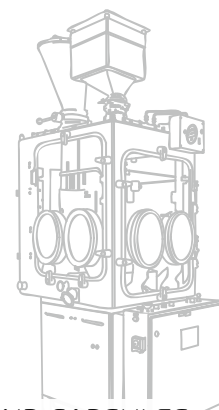
**DISCHARGE** AND  
CONTAINED OFFLOADING  
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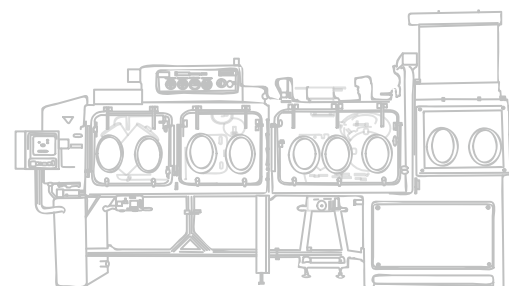
**MILLING AND MICRONIZING**  
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**SIEVING AND BLENDING**  
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**TABLETS AND CAPSULES**  
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**FORMULATION TOTAL SOLUTION**  
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# PRECISION BUILT SYSTEMS

ENGINEERED FOR HIGH CONTAINMENT  
TO NANOGRAM LEVELS

DISPENSING AND SAMPLING

CHARGING

FILTRATION AND DRYING

OFFLOADING

MILLING AND MICRONIZING

SIEVING AND BLENDING

TABLETS AND CAPSULES

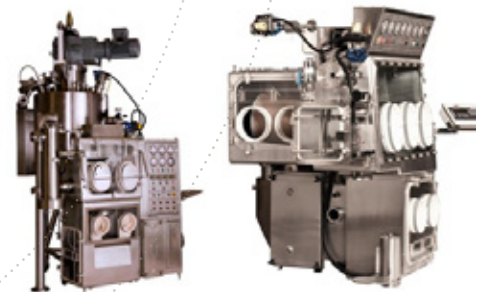
TOTAL PROCESS SOLUTIONS

## All PSL high containment solutions benefit from:

- Nitrogen purge system
- VHP Capability
- Clean-In-Place (CIP) and Wash-In-Place (WIP) systems
- Fixed or lift-up windows
- Safe change HEPA filters ("push-push")
- Front and rear operator working positions

## Sizes and main body construction:

- From laboratory to production size
- Gaged 4mm SS construction
- World recognised components and solvent resistant materials
- Designed according to required universal regulations
- HMI / PLC Control

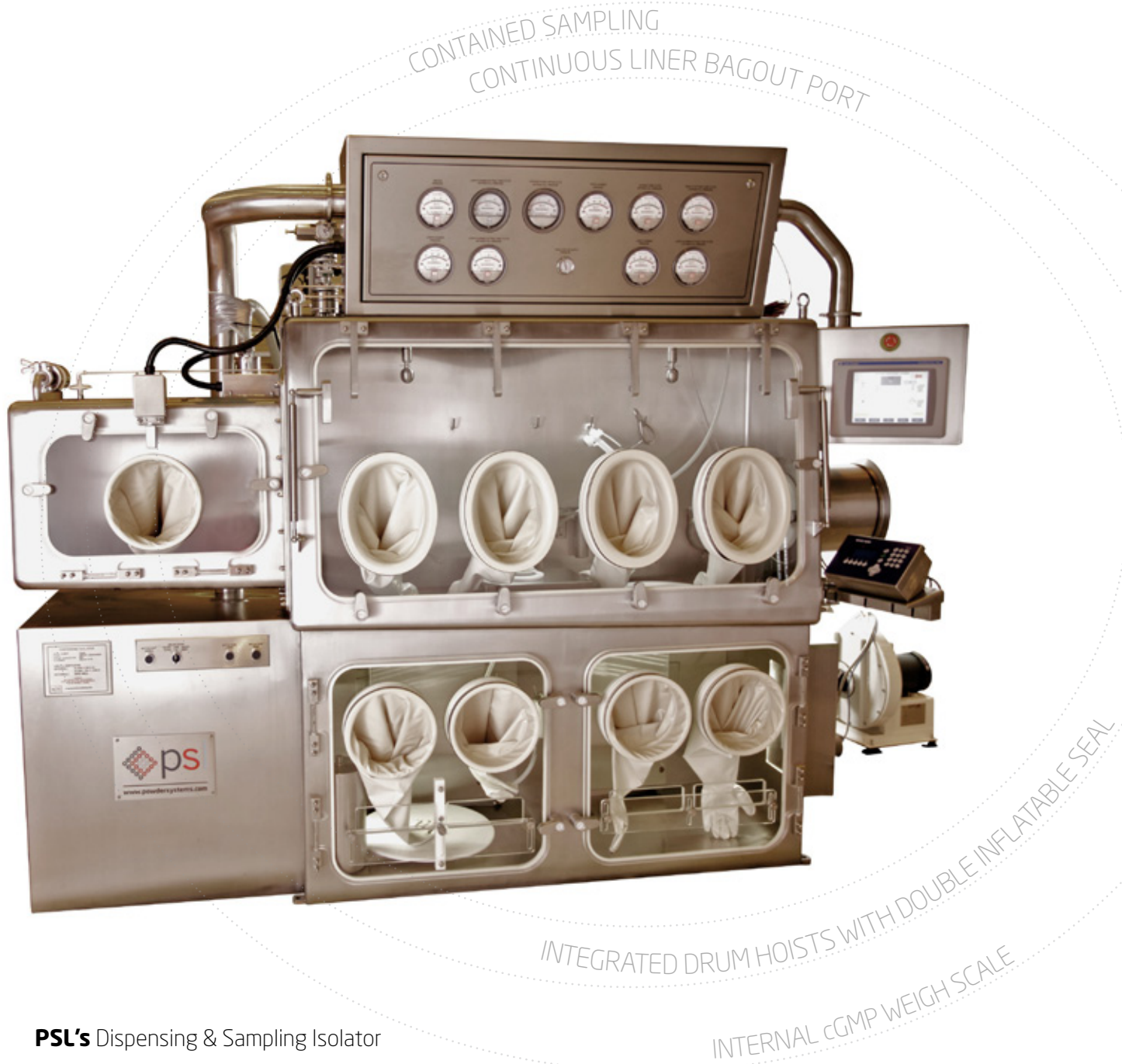


FULL PROCESS  
INTEGRATION

ERGONOMICALLY  
DESIGNED

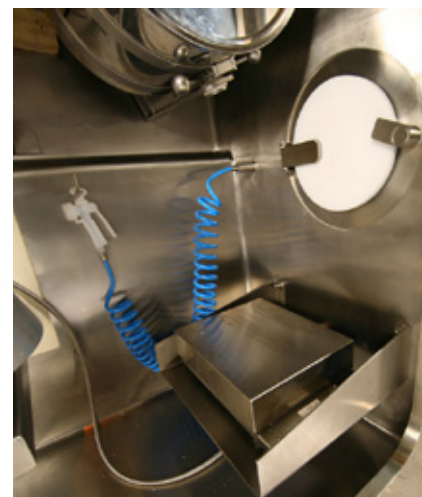
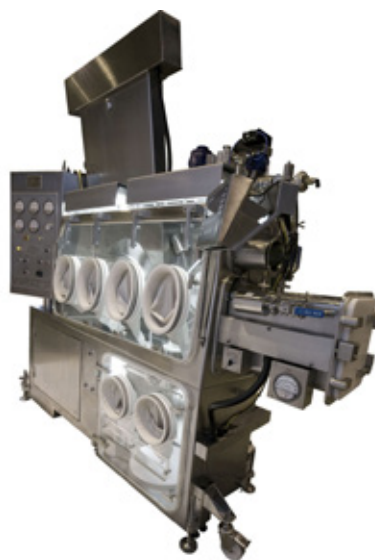
OEL TESTED

# DISPENSING AND SAMPLING



## PSL's Dispensing & Sampling Isolator

- Auto Control Valves
- Multi drum hoist
- Continuous liner system
- RTP / Split valve / Integrated airlock
- PSL weigh scale
- RH measurement and control available



### Contained Charging

PSL provide a range of process equipment.

- API reactor charging
- Slurry vessel charging
- IBC's
- Bag Charging
- Container



Drum Hoist

# DISCHARGE AND CONTAINED OFFLOADING

## Filter Dryer Discharging



**KILO LABORATORY**  
0.03m<sup>2</sup> to 0.125m<sup>2</sup>



**PILOT PLANT**  
0.3m<sup>2</sup> to 0.6m<sup>2</sup>



**COMMERCIAL PRODUCTION**  
1m<sup>2</sup> to 2.5m<sup>2</sup>

CONTINUOUS LINER SYSTEMS

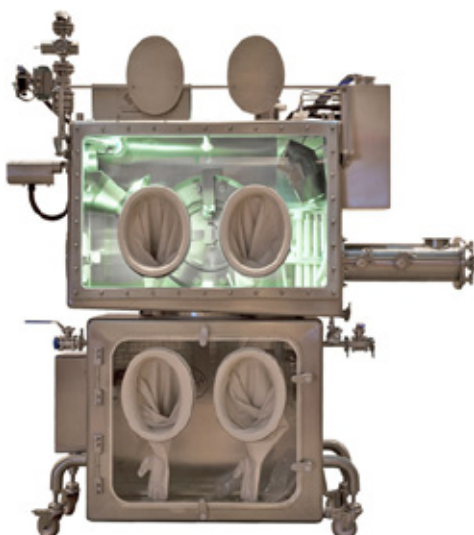
SPLIT VALVE

RTP ACCESS

## Contained Sampling and Heel Recovery System



- Sampling Port
- Plug Valves
- Raking Tools



## Tray Dryer Offloading





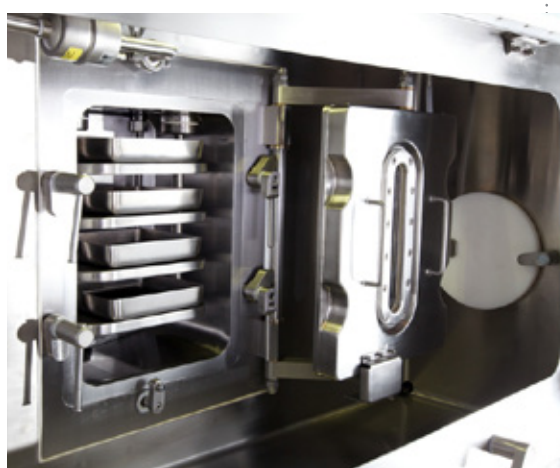
PSL can combine all these processes into high containment synthesis facilities.



HMI/PLC Control



Glass Vessel Reactor



Contained CakeStand tray dryer



Integrated 'Push-Push'  
safe change HEPA filter

# MILLING AND MICRONIZING

## Milling Systems and Isolators

**PSL** integration with other suppliers provides a real time in-line milling suite.

Multiple Mill Glovebox can accommodate different mills in a single glovebox.

HMI/ PLC control

PSL qualified UL panel builder

Specially designed purged airlock for multiple entries into the glovebox.

INTEGRATED FEEDER  
 INERT MILLING FOR PRODUCT AND OPERATOR PROTECTION  
 VARIETY OF CONTAINER SIZE INPUTS & OUTPUTS



Comil



Interchangeable Milling System



Integrated Feeder and  
 Micronizer Jet Mill

# SIEVING / TABLETS AND CAPSULES

## Sieving and Blending

- Integrated processes available: milling, sieving, blending, granulator, weighing
- Operator lifting aids



## Tablets and Capsules

PSL provides bespoke high containment retrofit systems to existing capsule filling machines and tablet presses.



Swing-out doors with safety interlocks

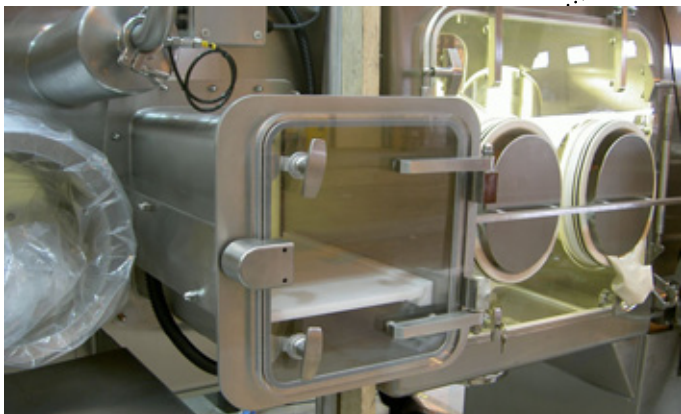
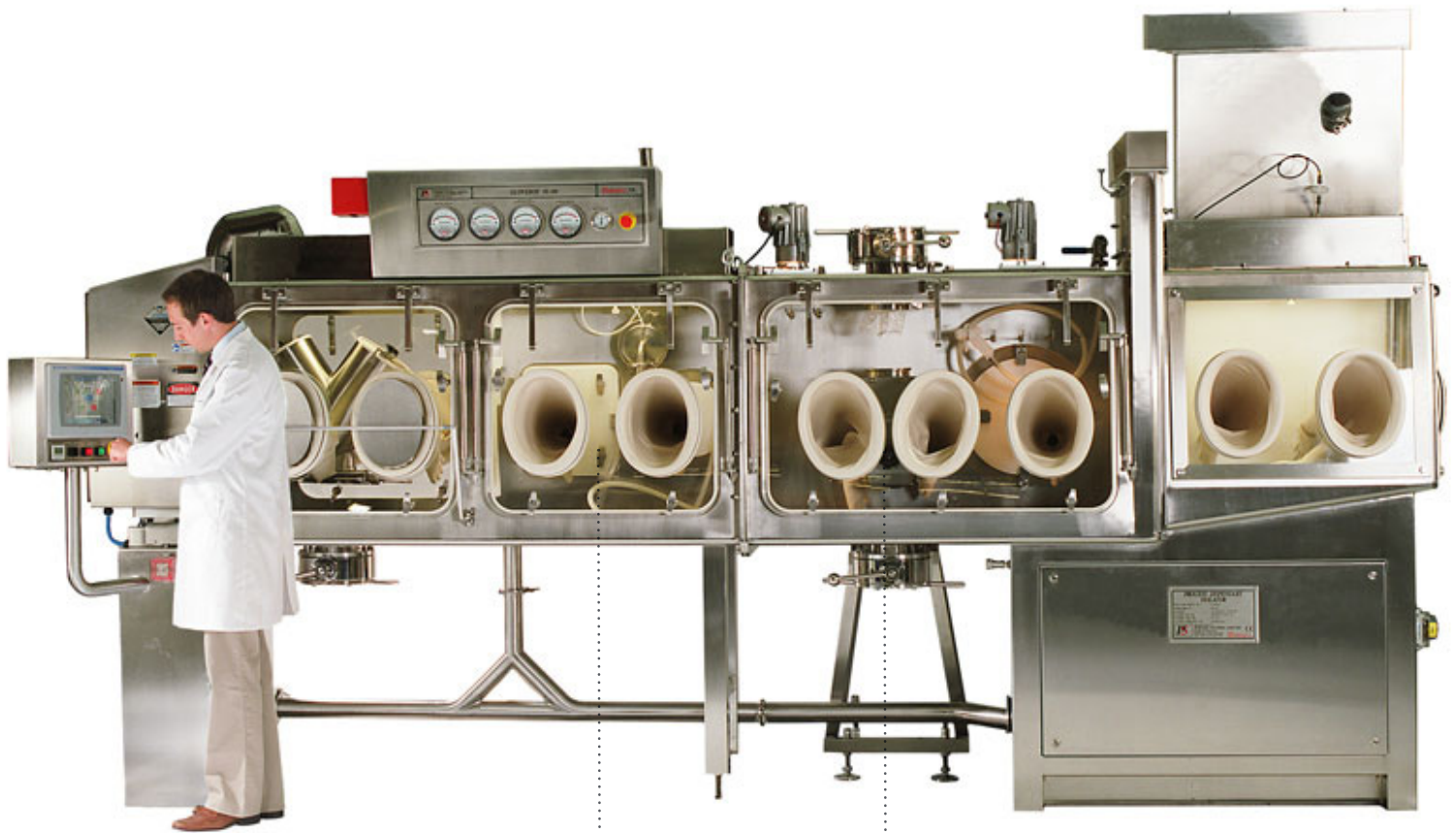


Xceloprotect™: High Containment Xcelodose® Micro-Dosing system

CONTAINED DE-DUSTING  
SPECIAL GLOVEPORT RETAINERS  
INTERNAL VACUUM CLEANING SYSTEM

# FORMULATION TOTAL SOLUTION

**PSL** can combine all these processes into high containment formulation facilities.



Purged airlock and Rear Access



Interlocked glove guards provide safety during contained blending.

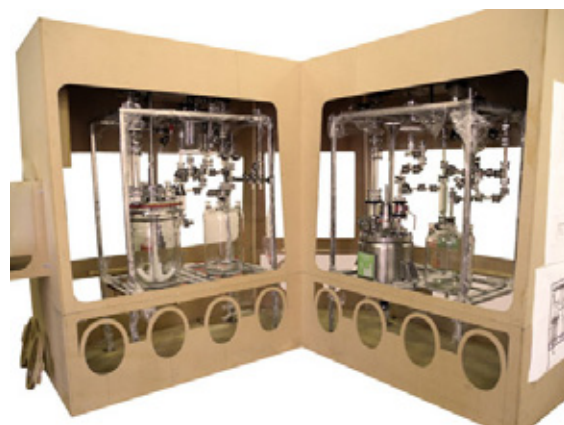


Multi Drum Hoist

## 3D MODELS AND FULL SCALE PRODUCT MOCK-UPS



**DETAILED 3D MODELS**



**FULL SCALE MOCK-UPS**

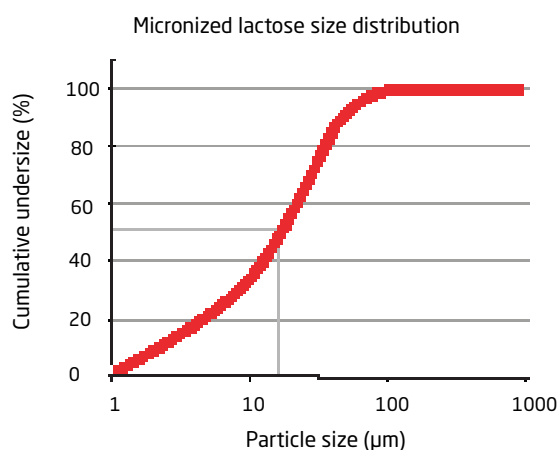
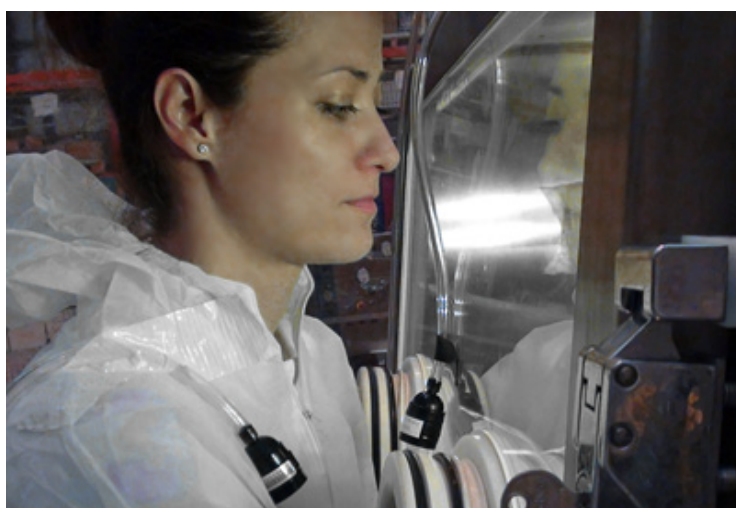
**PSL** provide 3D models and full-scale product mock-ups of your chosen containment equipment.

This allows ergonomic aspects to be addressed and the placement of process equipment to be reviewed and modified prior to production. We guarantee reliable manufacture quality through precision built systems designed for performance longevity.

## OEL TESTING AND INSTALLATION

In conjunction with our clients, we define OEL parameters for each containment system. Our containment solutions can then be tested and validated to achieve guaranteed containment to nanograms level.

PSL generate an OEL test protocol, following industry best practice guidelines, such as ISPE Risk-Mapp. We use a third party industrial hygienist to monitor testing and generate a final OEL test report. Micronized lactose is typically used as the surrogate powder and an independent analytical testing laboratory is used to generate final result.



## AFTERCARE SERVICE FROM PSL



**PSL Serve** is our dedicated after sales customer care, on-site service and spares team. They are technical specialists, here to aid the smooth installation of new equipment, along with the servicing and repair of existing PSL equipment and any spare parts required. PSL Serve provides full preventive maintenance contracts.

PSL offers full installation, commissioning and training. Information on our containment systems IQ/OQ packages is available upon request.



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