



◦ Quality ◦ Innovation ◦ Global Relationships

Serving our customers since 1989



PSL's experienced technical experts have refined our **Filter Dryer** range over many years using the latest global technology.

## QUALITY & INNOVATION

PSL is an award winning international manufacturer providing quality innovative technology with process development expertise to the pharmaceutical, biopharmaceutical, chemical and laboratory industries.

PSL have received two Queen's Awards for Enterprise, the UK's highest accolade for business success. Our awards were received for both International Trade and Innovation.



THE QUEEN'S AWARDS  
FOR ENTERPRISE:  
INTERNATIONAL TRADE  
2016



THE QUEEN'S AWARDS  
FOR ENTERPRISE:  
INNOVATION  
2016

PSL has offices around the globe to support our worldwide customers.

**Call** +44 (0)151 448 7700 ◦ [info@powdersystems.com](mailto:info@powdersystems.com) ◦ [www.powdersystems.com](http://www.powdersystems.com)

## SPARES, SERVICE AND CUSTOMER CARE FROM PSL

**PSL Serve** is our dedicated 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 repairs of existing PSL equipment and any spare parts required.

**PSL Serve** offers full installation, training and preventative maintenance contracts. Information on our IQ/OQ packages is available on request. Contact one of our dedicated customer care experts on [serve@powdersystems.com](mailto:serve@powdersystems.com)

To see the full PSL product range go to [www.powdersystems.com](http://www.powdersystems.com)



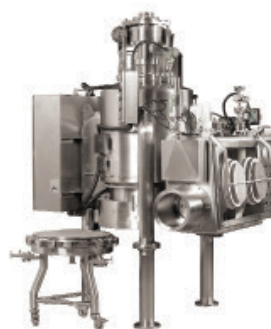
**GFD®**  
Lab Filter Dryers



**Microsphere  
Formulation**



**Tray Dryers**



**Nutsche Agitated  
Filter Dryers**



**High Containment Glovebox  
and Sterile Isolators**



## GLOBAL RELATIONSHIPS

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.

We continue to increase our number of global offices, agents and distributors to aid the smooth distribution of equipment to any part of the world.



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# Filter Dryers



• Quality • Innovation • Global Relationships

Serving our customers since 1989

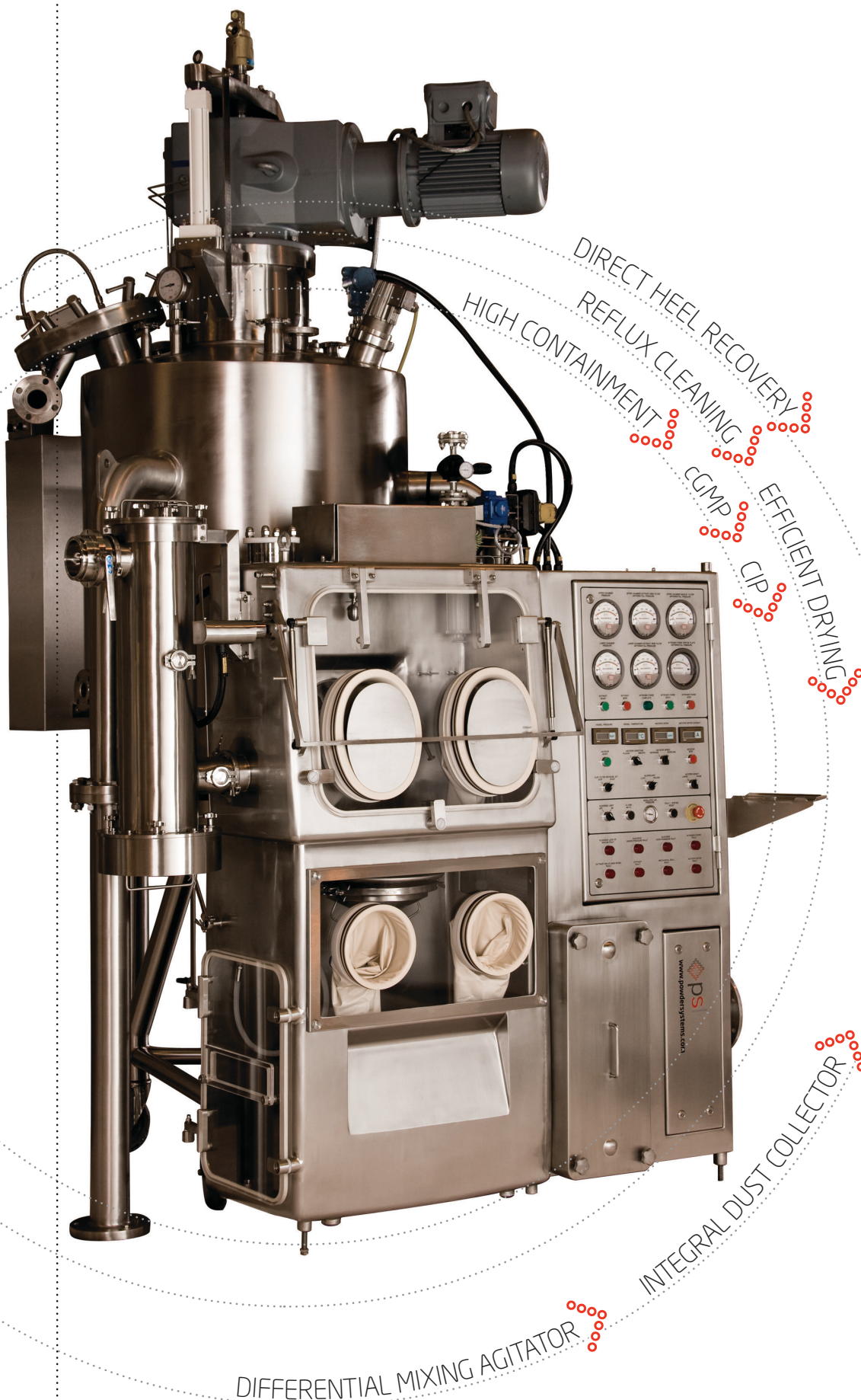


## FILTER DRYERS FROM PSL

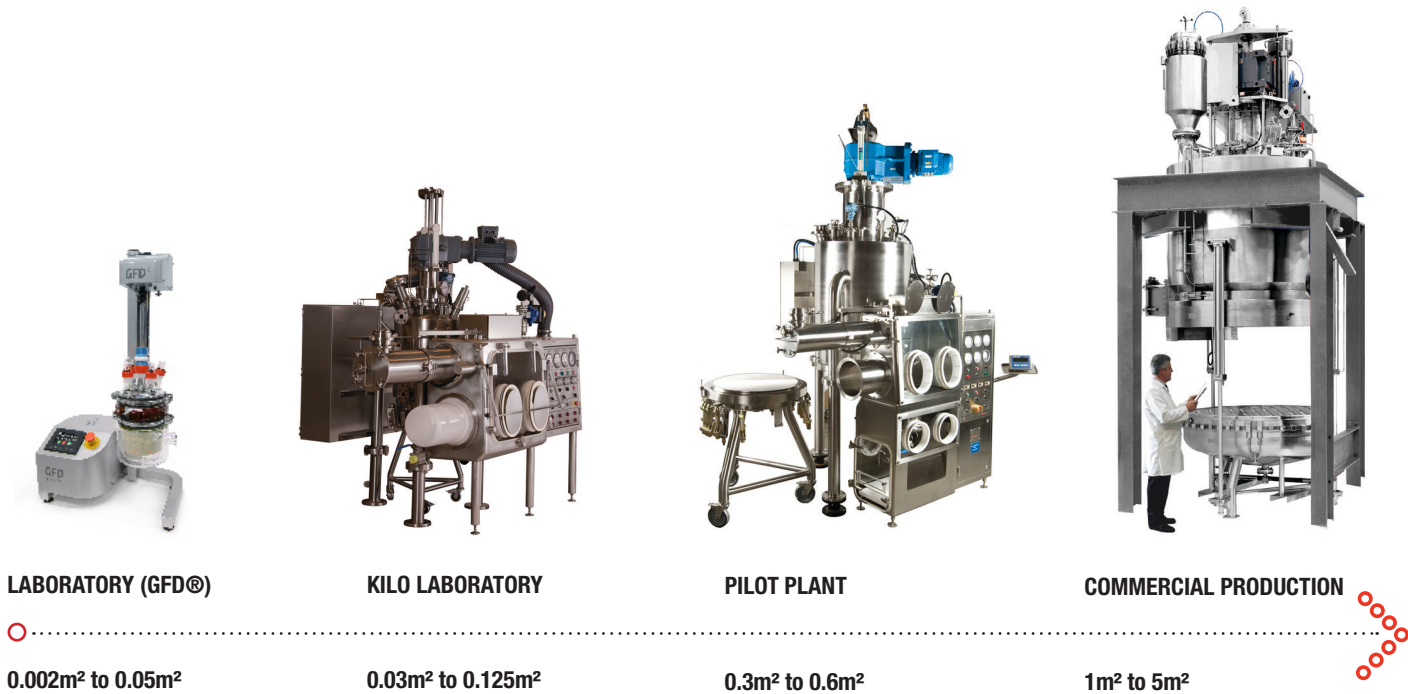
### PSL's filter dryers

provide optimum levels of safety and quality and are designed to meet industry regulations. Our filter dryers range from laboratory and R&D to full scale production, thus providing a full process solution.

PSL's high containment gloveboxes can be incorporated for the safe handling of highly potent APIs. We manufacture all of our filtration, drying and containment products in-house at our global engineering and manufacturing base, providing the complete integrated solution.



# DIRECT SCALE-UP



## FILTER DRYER RANGE

Filtration area (m²)	0.05	0.125	0.3	0.6	1	1.6	2	2.5
Max liquid volume (litres)	20	50 to 105	200 to 270	490 to 620	1,000	1,600	2,000	2,500
Cake volume range (litres)	8 to 10	19 to 50	90 to 120	180 to 200	300 to 400	480 to 640	600 to 800	750 to 1,000
Design temperature (°C)	-20 to 165	-20 to 165	-20 to 165	-20 to 165	-20 to 165	-20 to 165	-20 to 165	-20 to 165
Design temperature (°F)	-68 to 329	-68 to 329	-68 to 329	-68 to 329	-68 to 329	-68 to 329	-68 to 329	-68 to 329
Design pressure (Barg)	6	6	6	6	6	6	4.5	4.5
Design pressure (psig)	87	87	87	87	87	87	65	65
Stroke	150-200	150-400	300-400	300-400	300-400	300-400	300-400	300-400
Motor size (Kw)	0.25	1.5	3	4	5.5	7.5	11	15

†Other sizes and specifications are available

### Aseptic/Sterile Filter Dryers

PSL's aseptic/sterile filter dryers are designed and built to meet the strict manufacturing requirements necessary for aseptic/sterile processes. PSL's filter dryers utilise gas lift-off mechanical seals, unique off-loading designs and have CIP (clean-in-place) and SIP (steam-in-place) capabilities.



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## DESIGN FEATURES

- Highly efficient drying due to unique underplate heating system
- Reflux cleaning can typically achieve less than 2.5ppm
- Tapered filter plate and seal design provides minimum product retention
- Differential mixing agitator achieves homogeneity and uniformed drying even with difficult cakes
- Omega wave bellows



Discharge hatch with sampling port including high containment product offload and heel recovery gloveboxes designed and integrated by PSL



Minimum solvent volumes beneath mesh and direct heating



Internal dust collector design for higher product yield and ease of cleaning



Tiltable filter dryer options are available