Fight against COVID-19

Krantz

High integrity products for isolation wards & laboratories

Filter & Damper Systems

Isolation ward

High integrity products for isolation wards & laboratories

In light of the COVID-19 pandemic, Krantz is able to supply top-of-the-line equipment for biocontainment in critical spaces of epidemic / pandemic treatment centres, hospitals, isolation wards and research laboratories.

Krantz offers a wide, solution-oriented range of products for HEPA filter systems, and we are sure to give you the ideal solutions for your needs.

Our designs take into account such applicable rules as:

- The "Laboratory biosafety manual“ from the World Health Organisation (WHO),
- "Biosafety in Microbiological and Biomedical Laboratories” (BMBL) from the CDC and
- EN 12 128 “Biotechnology Laboratories for research, development and analysis – containtment levels of microbiology laboratories, areas of risk, localities and physical safety requirements.“

Following leading BSL3 / BSL4 laboratories laboratories are equipped with HEPA filter systems, gastight dampers and more from Krantz:

- Pirbright Institute, UK
- Marburg Institute, Germany
- Bernhard-Nocht-Institut (BNI), Hamburg, Germany
- Robert Koch-Institut (RKI), Berlin, Germany
- Friedrich-Löffler-Institut (FLI), Riems, Germany

Flooding of filter housing with disinfectant

Verification of resistance to disinfectant

Krantz HEPA Filter can be provided for / with:

- Decontamination
- In situ scanning of HEPA filter elements
- Gastight damper
- Bag-in / Bag-out system (BiBo)
- Fully-welded design
- Test groove for each HEPA filter element
- Test groove for seat of damper blade
- Usage of material according to customer requirements

Krantz has already equipped all leading BSL 3 and BSL 4 laboratories in Europe with safetyre-lated equipment, so as not to spread any micro-organisms via air out of these sensitive areas.

Our product range includes:

- HEPA filter housing in different designs, adaptable to customer requirements, up to 54,400 m^3/h
- Gastight dampers in circular, square and rectangular design
- Gastight doors
- Mobile unit for in situ efficiency measure-ment of HEPA filter elements acc. EN 1822
- Several maintenance accessories

These sensitive filter systems are designed and manufactured in Germany by experienced experts.

Components are strictly quality controlled; new goods are tested long-term tested, e.g.:

- Verification of resistance to disinfectant
- Long-term test of gastight damper

Different certificates are present at Krantz, as:

- DIN ENISO 9001
- BS OHSAS 18001
- DIN EN 14001
- EN 1090-2
- DIN EN ISO 3834-2
- Scanning device certified to EN 1822-4 by TÜV
- At the leading Robert Koch Institut [RKI] Krantz Filter Systems were successfuly tested and verfied in BSL3 / BSL4 labora-tories for:
  - Evidence of disinfection using hydrogen peroxide, including of HEPA filter elements under operating conditions, and
  - Evidence of filtration efficiency of HEPA filter elements class H13, H14 acc. EN1822 even after disinfection

Perfect solutions for local circumstances e.g. tranpsortation

Impressions of successfully delivered HEPA filter systems for BSL3 / BSL4 laboratories

Furthermore, the state-of-the-art Research and Development Centre in Aachen is available. R&D engineers search for innovative solutions and test them in experimental labs. Successful solutions are then thoroughly checked in our engineering department where they are converted into efficient systems.

Several filter housings with dampers designed for different volume flows and on-site installation requirements.

1

2

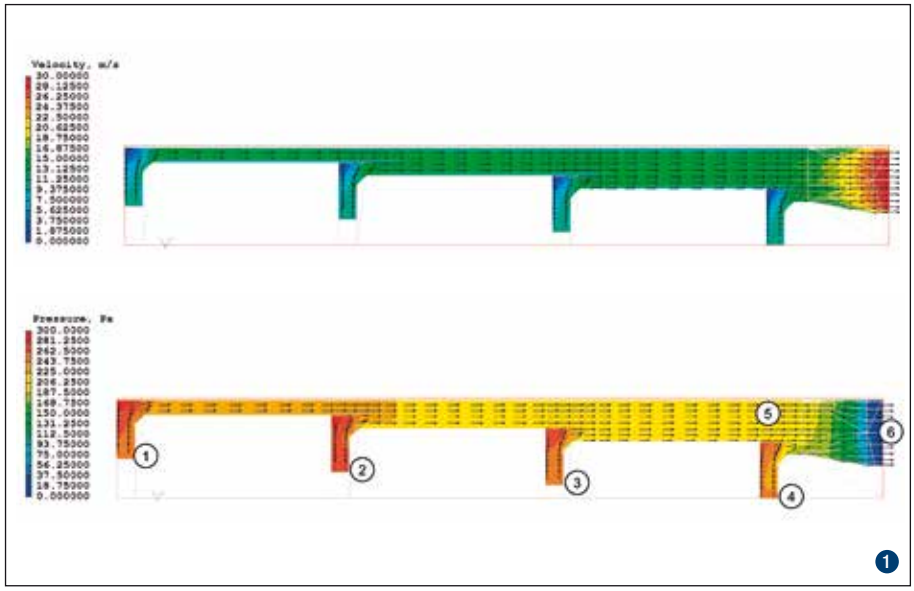
Legend

1 Safe change filter housing
2 Several HEPA filter housing with dampers installed and commissioned

For further information see: **www.krantz.de/filteranddampersystems**

Example: Laboratory

Computational fluid dynamics studies provided by our Research & Developement Center for BSL3 / BSL4 laboratories



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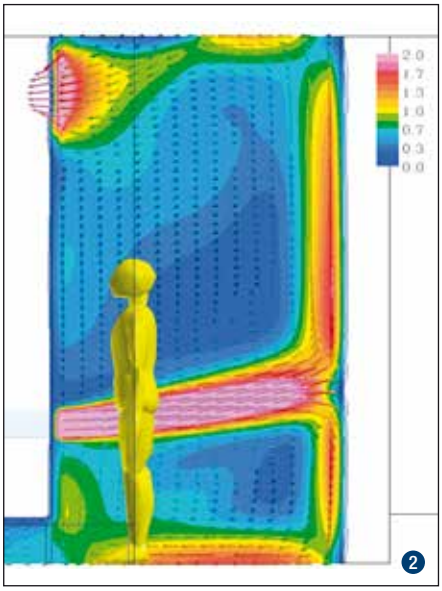

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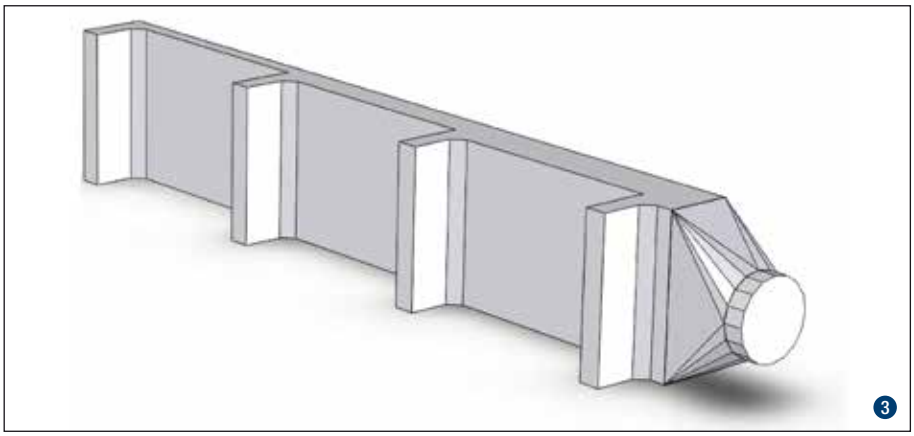

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Legend

1+2 CFD simulation by R&D centre
3 Clean gas manifold model

Example: Treatment of a patient under safety conditions

Impressions of successfully delivered HEPA filter systems for BSL3 / BSL4 laboratories

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Legend

1 Three stage BSL4 filter housings with 180° redirection of air
2 Safe change filter housing
3 Typical two stage BSL4 filter housings, spacesaving installation of two housings in one rack

Several HEPA Filter housing with dampers installed and commissioned.

Piping of stainless steel

Impressions of successfully delivered HEPA filter systems for BSL3 / BSL4 laboratories

Legend

1 Fully-welded design

Gastight door

Unit for in situ measurement

Accessories and other deliverables for laboratories

Legend

1 Gastight door as part of airlock
2 Gastight door
3 Disinfection Device

Example: Laboratory

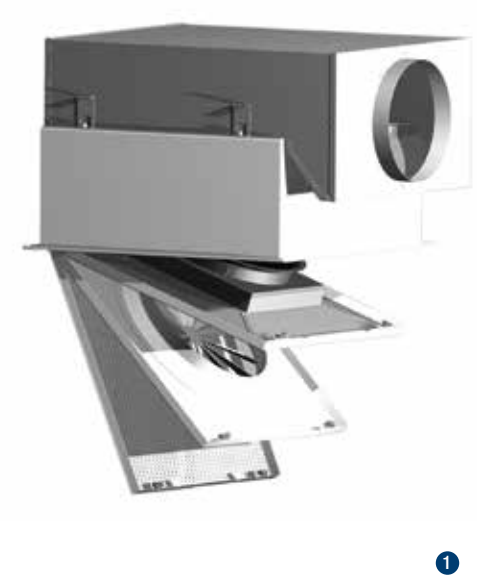
Accessories and other deliveries for laboratories

Legend

1 Filter housing $SCF_{hightec}$ with gastight slide
2+3 Mobile units for several filter stages and volume flow
4 Container filyersystem

Laboratory module for air supply with cooling and heating function

Accessories and other deliverables for laboratories



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4

Legend

1+2 HEPA filter air outlet with pull down outlet element, built in:
3 – BIOZ-Bioinnovationszentrum Dresden
4 – Dreifaltigkeits-Krankenhaus (hospital), Wesseling

Krantz has many years of experience in the design and manufacturing of filter housings and dampers for BSL3 and BSL4 laboratories. For over 20 years, Krantz has delivered effective solutions to laboratories in Germany and around the world, including:

Project	Location	Class	of Air Flow [m³/h]	Year
Public Health Laboratory, Nam Cheong Street	Hong Kong	BSL-3 Laboratory	275,000	2000
Jockey Club School of Chinese Medicine Building at Baptiste University	Hong Kong	BSL-3 Laboratory	19,500	2001
New Veterinary Laboratory	Hong Kong	BSL-3 Laboratory	9,700	2001
Solvay Pharmaceuticals	Netherland	Class 3 production	66,100	2003
New Medical Complex Hong Kong University Influenca Center	Hong Kong	BSL-3+ Laboratory	19,500	2004
St. Theresa Hospital	Hong Kong	Isolation Hospital	5,760	2004
Pok Oi Hospital	Hong Kong	Isolation Hospital	160,000	2005
Chiron Vaccines Marburg Geb. H28	Germany	Class 3 production	30,000	2005
New Infectious Disease Centre, Princess Margaret Hospital	Hong Kong	Class 3 isolation room	30,000	2006
Philips-University Marburg BSL-4 Laboratory	Germany	BSL-4 Laboratory	20,000	2006
Heinrich-Heine-University, Düsseldorf	Germany	BSL-3 Laboratory	9,000	2007
Bernhard-Nocht-Institute, Hamburg	Germany	BSL-4 Laboratory	18,000	2007
FLI-Ile of Riems, Animal Lab	Germany	BSL-4 Laboratory	300,000	2009
FLI-Ile of Riems, Animal Lab	Germany	BSL-4 Laboratory	275,000	2009
Kunming	China	BSL Laboratory		2010
Eppendorf (UKE), Hamburg	Germany	University hospital		2010
Cannossa Hospital	Hong Kong	BSL Laboratory		2011
Vilnius	Lithuania	BSL3 Laboratory		2011
Medical University, Hannover	Germany	Animal Health Laboratory		2011
University Hospital, Aachen	Germany	University hospital		2011
IAH Pirbright	England	Animal Health Laboratory	111,000	2011/12
Robert Koch-Institute, Berlin	Germany	BSL-4 Laboratory	200,000	2012
BSL 3	Norway	BSL3 Laboratory	15,000	2012
National Bio and Agro-Defence Facility, NBAF Kansas State University	USA	BSL4 Laboratory	3,000	2013
Chinese Academy of Agricultural Sciences, Lanzhou	China		30,000	2014
IC-FMD, Bhubbaneswar	India	BSL3 Laboratory	136,000	2015
BSL3, Riyadh	Saudi Arabia	BSL3	32,000	2015
CEA/CADARACHE	France		3,000	2015
BSL MSD, Cologne	Germany	BSL	50,000	2015
BSL, Roche Diagnostics, Mannheim	Germany	BSL	1,500	2015
BSL3	Hong Kong	BSL 3	88,000	2015
BSL, FLI, Riems	Germany	BSL	1,500	2016
BSL	Hong Kong	BSL	18,000	2016
Bad Berleburg, Otto	Germany	BSL	17,500	2016
CIID Labor, Heidelberg	Germany		12,000	2016
Miltenyi Biotec, BGL	Germany		4,000	2016
Paul-Ehrlich-Institut, Langen	Germany	BSL3 Laboratory	5,000	2017
JEN, Jülich	Germany		111,000	2017
BSL	Hong Kong	BSL	270,000	2017
FU Berlin Animal Hospital, Berlin	Germany	Animal Hospital	51,000	2019
BSL NCC	Singapore	BSL	126,000	2019

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