Laboratory Solutions

Shielded Rooms | Cleanrooms | Biosafety Laboratories | Isolation Stations

www.frankonia-laboratory.com

FRANKONIA

The Specialist for Biosafety and Cleanroom Laboratories and Shielded Rooms

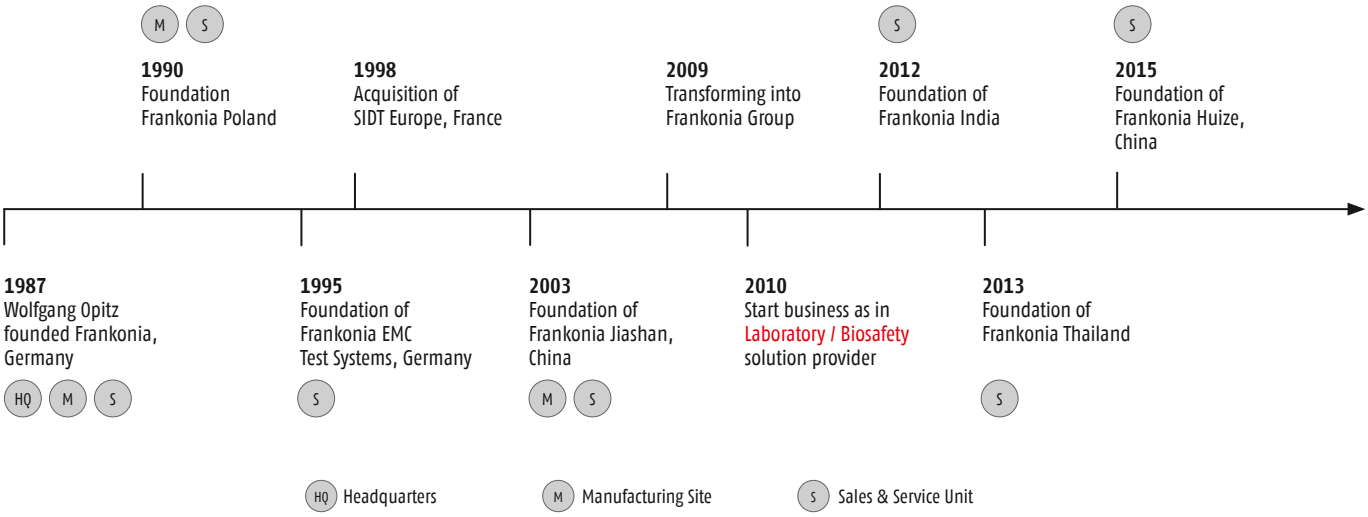
Frankonia Group
Frankonia, a turnkey solution provider and manufacturer, offers a complete range of products for biosafety and cleanroom laboratories, as well as any kind of shielded rooms.

The Frankonia Group was founded in 1987 as a solution provider for EMC laboratories, meeting the increasing demand for highly specialized testing environments for the electronic and automotive industry. With more than 25 years of experience to date, Frankonia maintains its leading position in laboratory solutions worldwide. Without limitations in its capabilities and resources, Frankonia develops future-oriented concepts for both EMC and biosafety laboratories, which guarantee the optimal use of resources, as well as the best possible customized solutions.

- FRANKONIA demonstrates a global presence in cooperation with a well-structured network of productions, representations and service units.
- FRANKONIA strives to be the preferred partner for customized and state-of-the-art solutions.
- FRANKONIA provides fundamental knowledge to operate as a complete solution provider.
- FRANKONIA implements innovative technologies to enhance efficiency and improve results and quality, along with customers' needs.

We are proud of our highly specialized team that puts our customers' demands into practice. It is our philosophy to improve products, realize new ideas and complete our product range within our broad scope of business. The fact that Frankonia is able to offer complete solutions from the first sketch to the final handover makes it a unique and trustworthy partner worldwide.

Frankonia Laboratory focuses on providing worldwide complete laboratory solutions, cleanroom and pharmacy solutions, as well as any kind of shielded rooms. With the combination of both RF expertise and the cleanroom laboratory, it offers great opportunities that meet current and future requirements.



Frankonia Group			
Employees	245	Annual turnover	~ 35 Mio. Euro
Sales and Service companies	6 sales and service organizations	Share EMC	~ 75 %
Distributiors network	~ 50 distributors worldwide	Share Laboratory	~ 15 %
Headquarters	Heideck (Bavaria), Germany	Share Systems	~ 10 %
Production sites	3 production units in 3 countries	Foundation	1987

Frankonia Authenticity
Frankonia stands for 'Made in Germany', customized solutions, latest technologies, highest quality, innovative concepts and materials, and reliable solutions. Our scope of solutions allows an efficient use, reduces costs and time, ensures a stable quality level and guarantees a future-proven solution for any kind of laboratory or protective room. Frankonia Laboratory sets new standards for innovative and complete environments and offers a real added value to our customers.

Business Areas
Frankonia develops future-oriented concepts for business areas' EMC laboratories, biosafety laboratories and systems, which guarantee the optimal use of resources, as well as the best possible customized solutions. It is our philosophy to improve products, realize new ideas and complete our product range in three business areas: EMC, Laboratories and Systems.

Frankonia Group

EMC

Laboratory

Systems

Frankonia EMC
The EMC testing laboratory industry is a high-technical, innovative and fast-changing niche industry. Frankonia EMC offers complete solutions for the electronic and automotive industry, which meet customers' individual requirements. These include the testing environment and testing system that are related to electromagnetic compatibility testing. Today, besides our EMC anechoic chamber business, we offer a wide variety of EMC test systems, for instance, immunity test systems according to IEC/EN 61000-4-3 and IEC/EN 61000-4-6 and also, emission measuring systems. Furthermore, Frankonia EMC offers single components like RF-power amplifiers, antennas, signal generators, RF-power meters and magnetic field test equipment.

Frankonia Laboratory
The Frankonia Laboratory division includes a comprehensive product portfolio that relates to biosafety and cleanroom laboratories in medical, pharmaceutical and infection research and science. For more than five years, the Laboratory division has responded to specific customer and market requirements with solutions for BSL-3 and BSL-4. BSL-3 is applicable to clinical, diagnostic, teaching, research or production facilities, where work is performed with indigenous or exotic agents that may cause serious or potentially lethal disease through the inhalation route of exposure. BSL-4 is required for work with dangerous and exotic agents that pose a high individual risk of aerosol-transmitted laboratory infections and life-threatening diseases, which are frequently fatal and have no vaccines or treatments, or a related agent with an unknown risk of transmission. Therefore, Frankonia Laboratory contributes to research, prevention and treatment for several application related to biosafety laboratories.

Frankonia Systems
In 2004, Frankonia established the business area, Systems. This responds to demands in handrail systems, wall construction and protection systems, as well as any kind of stainless steel manufacturing. Frankonia Systems also includes a broad range of stainless steel production and counts a famous premium kitchen manufacturer as a customer. Thanks to the modular system, an easy and reasonable product range is not limited to hospitals, laboratories and real estate.

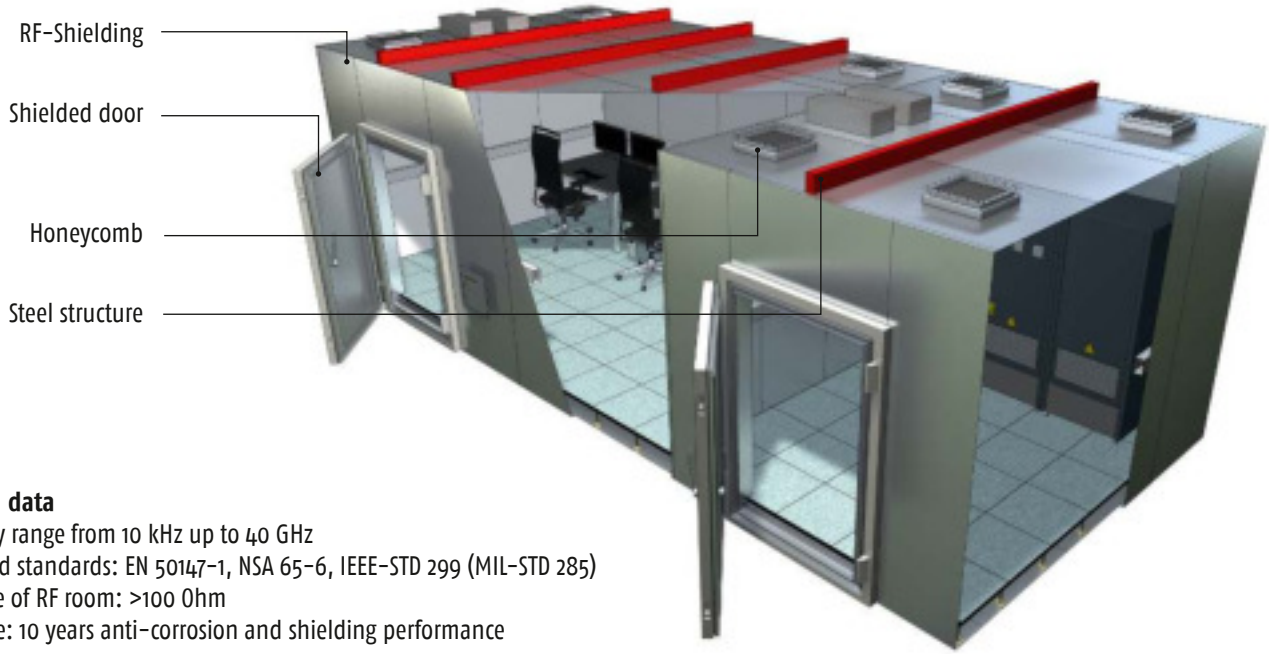
Frankonia Laboratory Solutions
For transforming our customers' demands, we combine our knowledge of EMC, biosafety and high-class manufacturing capabilities within all of these complex applications. With this, Frankonia offers a wide range of expertise and innovation:
- Consulting
- Project Management
- Production
- Equipment
- Installation and Service
- Solutions

Due to customers' demands, Frankonia can transform a wide variety of products into turnkey solutions. This is because only a complete and comprehensive solution can create customers' satisfaction.

FRANKONIA
The unique and trustworthy partner for laboratory solutions worldwide.

PRODUCT EXPERTISE
RF-Shielding

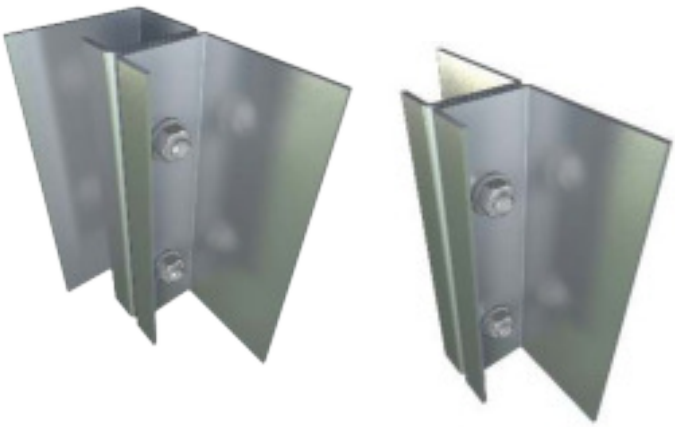
RF-Sielding
The RF-shielding is Frankonia's basic system and follows the principles of the Faraday cage. The modular and prefabricated high-quality RF-shielding is typically a pan-type shielding made of 2.0 mm galvanized steel that is manufactured to perfection. Frankonia's shielding is used for all kinds of shielded rooms, such as MRI, Data Center, EMC Anechoic Chambers, or any other room that requires a shielded standard.
Standardization matters to ensure the highest shielding quality and to ensure a maximum of functionality and flexibility that adapts to all special conditions. The complete shielding system is designed to match current or even future modifications and requirements in length, width and height. Thanks to the modular and prefabricated system, modifications can be realized in a very short time at lowest costs, minimizing dirt, dust and noise. Frankonia's contribution to an overall modular system allows for a complete transfer of all kinds of chamber and is therefore a future-proofed solution.
Each pan-type shielding module offers an all-side reverse bending in order to achieve a self-supporting static structure, and to bolt the modules correctly. Besides this, it allows for an internal installation of accessories without penetrating the shielding. Frankonia's shielding is prepared for internal bolting that allows an installation very close to the building surface. In special cases, the shielding can be bolted in reverse from outside. The corners are welded completely in-house and so are assured a perfect connection to the surrounding modules. Frankonia's shielding is a complete self-supporting construction system with a module standard of 3.0 x 1.2 m. In between all modules a highly conductive mesh gasket is integrated that ensures a long-lasting shielding quality. Within this system, all Frankonia components, e.g., honeycombs, doors, feed-through's or filters offer the same RF quality level.



Technical data
Frequency range from 10 kHz up to 40 GHz
Considered standards: EN 50147-1, NSA 65-6, IEEE-STD 299 (MIL-STD 285)
Resistance of RF room: >100 Ohm
Guarantee: 10 years anti-corrosion and shielding performance

The standard shielding is made of German steel that offers a minimum of 20.0 µm galvanic coating in accordance with DIN 17162/EN 10142 with quality index DX 52 D+Z. The acceptable tolerance is in accordance with DIN/EN 10143 limited and is a minimum 275 g/m2.

Pan-type modular system

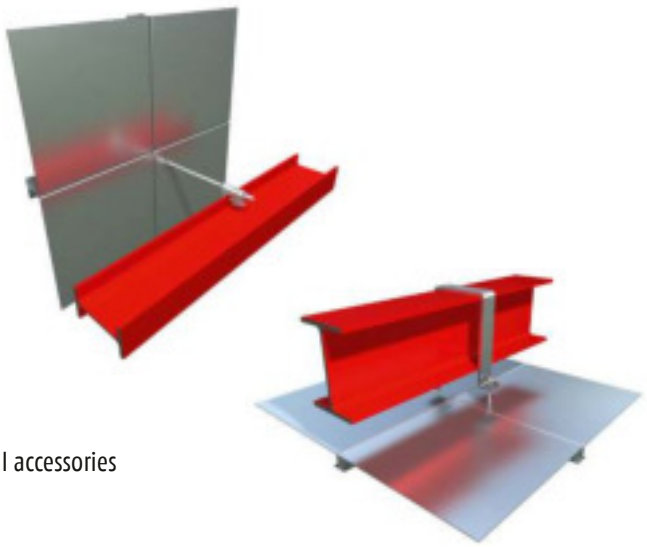


Shielding Attenuation		
Frequency	Shielding Attenuation	Field
10 kHz	>80 dB	Magnetic
100 kHz	>100 dB	Magnetic
1 MHz	>100 dB	Magnetic
100 MHz	>110 dB	Plane wave
400 MHz	>110 dB	Plane wave
1 GHz	>110 dB	Plane wave
18 GHz	>100 dB	Microwave
40 GHz	>90 dB	Microwave

Structure and Doors

Steel structur

For static purposes, larger rooms or specific room application (e.g., ceiling supply units) require an additional steel structure support that perfectly meets the shielding fixation, considers a variable static design for different chamber sizes and configurations, and adapts to any specific building characteristics and conditioning layouts. Frankonia's steel structure is a totally self-supporting system and does not require a connection to the existing building. Furthermore, the steel structure is painted for corrosion prevention. Moreover, Frankonia's steel structure considers country-specific seismic conditions as well as low point loading to the buildings' concrete slab.



Features

- High-class and identical shielding attenuation for modules, doors, and all accessories
- Broad range of ventilation, feed-through, and wave-guide components
- Complete interior and electrical integration
- Prefabricated and modular shielding modules; incl. steel structure that meets specific static purposes

Doors

The doors by Frankonia are designed according to industrial standards in respect of durability, flexibility and all kinds of safety issues related to the EC machinery directive.

General characteristics

- Very strong construction for long-lasting stability
- RF-shielding realized with an innovative highly conductive copper beryllium contact springs
- The complete contacting system is easily exchangeable
- Threshold protection considered to avoid damage
- Materials are hot-galvanized for corrosion prevention
- All materials used are equal to the shielding to ensure continuous quality (with triple-row system)
- Clever and easy to maintain
- MTBF: tested for more than 20,000 opening/closing cycles
- Door frame and leaf finish in stainless steel available

The triple-row knife-edge system achieves by its innovative design the same shielding effectiveness as the standard shielding modules, and therefore offers continuous quality. In dependence of the room application, the shielding attenuation requirements can be lower. This special development allows for complex double-pivoted hinges that stabilize the construction and greatly extend the lifespan of the highly conductive contact springs. Furthermore, this system reduces the maintenance intervals to a minimum, ensuring a stable shielding performance.

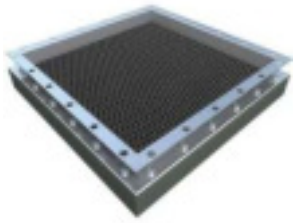
Features

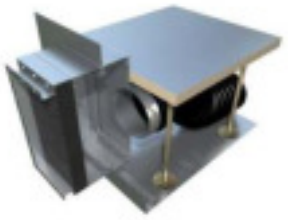
- Optional door stopper to limit the door movement
- Optional locking system, interlock and sluice function, prepared for badge or code locking
- High-class RF shielding rooms with triple-row knife-edge system of highly conductive contact springs
- Doors with manual, electric or pneumatic latching system
- Designed and built for long-lasting performance and stability
- User-friendly and safe use according to EC machinery directive

PRODUCT EXPERTISE
Ventilation, Feed-through and Wave-guide Components

Frankonia as a specialist in RF-shielding and EMC testing chambers provides complementary, standardized and customized products to maintain its position as a turnkey provider. This includes, for instance, connection panels (CP) located in the floor, penetration panels (PP) incl. connectors located on the wall, wave-guide components for liquids, air or gases, fiberglass feed-through components, special cable feed-through via RFI trap, and all kinds of ventilation and air conditioning.

Ventilation
The ventilation in any kind of shielded rooms is a very important aspect for the comfort of users, but is mainly necessary to ensure a stable temperature, a cooling of the equipment, and is furthermore required in order to reproduce conditions. The shielded ventilation can be realized via special filters called honeycomb with a frequency range from 10 kHz up to 18 GHz (40 GHz as option), and can be located individually on the shielding modules that meet any applications, e.g., for air balancing, gas exhaustion, or with a tube adapter. Frankonia's honeycombs are designed in such a way that local air ducts can be easily mounted. In the scope of Frankonia's turnkey capabilities, a complete air conditioning unit is available for any kind of room size and application. Gas evacuating and protection systems as well as extinguishing systems are available too.



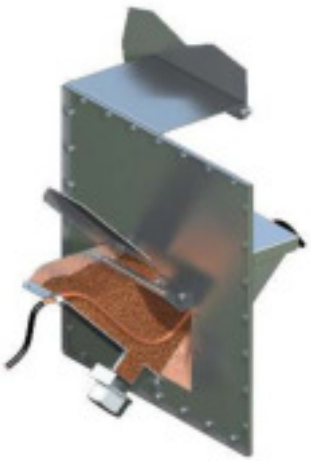


Features
- Honeycombs up to 18 GHz (40 GHz as option)
- Complete AC unit for specific applications and room sizes
- Additional gas evacuating and protection systems and extinguishing systems available
- Turnkey solution

Feed-through and wave-guide components
Feed-through components of any kind are required to meet RF standards without minimizing the shielding attenuation. Frankonia's broad range of feed-through components meets all requirements at the highest standards, covering the whole frequency range. All feed-through components are located on penetration panels in order to easily modify the configuration due to future tasks. Our standard range of feed-through components includes fiber optics and wave-guide components for compressed air, liquids or gases.

Features
- Individual penetration panels (PP)
- Broad range of feed-through components, e.g., fiber optics
- Broad range of wave-guide components, e.g., compressed air, liquids or gases

RFI trap
In the case of feeding through a special or non-standardized cable, the RFI trap offers the right characteristics. It is designed as a drain siphon mountable on a penetration panel. Frankonia's RFI trap is filled with copper granulates that ensures the right conductivity, and allows a continuous cable installation without an interface, e.g., connector.

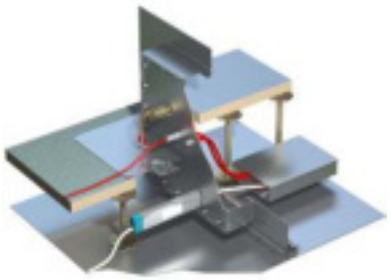


Features
- Non-standardized cable feed-through
- High conductivity

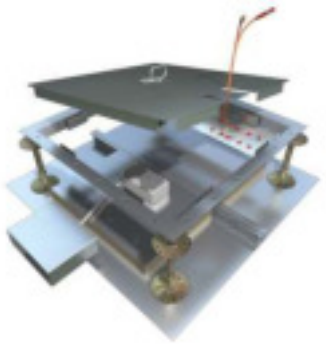
Integration and Interior Design

Electrical Integration
The complete electrical integration for each kind of room is designed according to EU safety standards and is prepared as an upgradable solution that allows future modifications. In its standard configuration, an electrical distribution box with MCBs and RCDs, illumination with halogen or LED lights for optimum lighting conditions, connection panels for the false floor, and an emergency panic button incl. a battery buffered emergency light are considered.
Frankonia's electrical distribution box is accessible from inside or outside, and ensures at all times a user-friendly control. In order to provide the necessary power and data line connections to the right place inside the shielded room, Frankonia's connection panels can be placed in the false floor and individually configured with power outlets and connectors. Additional to the connection panels in the floor are the penetration panels located at the walls. Furthermore, a complete range of power line, data line, and signal line filters are available, too. Frankonia's specially designed ducting and electrical engineering ensures the shortest cable length and highest flexibility for future modifications, as well as cost-effective and state-of-the-art integration.

Features
- Complete and integrative electrical installation
- Upgradable for future tasks
- Optimum lighting conditions with halogen or LED lights
- Connection panels (CP) for the false floor with individual configurations
- Penetration panels (PP) for the walls with individual configurations
- Complete range of power line, data line, and signal line filters
- Complete set of cabling and shielded connectors
- Optical converters
- Turnkey solution



Penetration Panel (PP)
Mounted on the RF-Shielding



Connection Panel (CP)
Integrated in the false floor

Interior Design
Every kind of Frankonia's shielded room provides an appealing internal finish. This includes an adapted inner lining for walls and ceilings, which can be made with almost every material that our customers desire, for instance, glass, plasterboard, PVC or stainless steel. The floor is designed as a false floor, which is adjustable in height in order to ensure a minimum space for all necessary ducting. The standard version allows a load of 500 kg/m2 but is almost without limitation, according to customers' requirements.

Interior for Cleanroom and Biosafety Applications
For any kind of room application within the cleanroom and biosafety scope, Frankonia offers different internal claddings and solutions with various materials. The interior design for wall cladding can be realized in steel, stainless steel, PVC, HPL, glass or LED illuminated glass, including sound absorption and ambient light functions. Hygienic requirements enjoy highest attention within the MIDAS systems.

Modular Interior Design and Advanced Solutions
• MIDAS Glass
Frankonia's MIDAS glass wall system for hygienic applications (e.g., MRI suite) shifts a RF-shielded room to a fascinating and unique atmosphere. Moreover, the MIDAS system offers flush integration for equipment with the smallest possible joints.

• MIDAS LED Glass (RGB)
Various colors are possible and, with the RGB LED illuminated glass panels, the color preference is our users' choice.

• MIDAS Steel
Frankonia's MIDAS steel or stainless steel system is mostly related to biosafety applications for BSL-3 or BSL-4. In combination with the RF-shielding, the benefits of modularity and security generate new possibilities and combine the highest standards with the latest technology.

Features:
- Internal cladding with various materials possible
- Cladding adaptable to any disciplines related to shielded room applications
- Special internal cladding for biosafety and cleanroom applications available
- False floors without limitations in weight incl. reasonable flooring
- False ceiling incl. built-in equipment (e.g., LAF system, HEPA filters)
- Complete range of equipment
- Turnkey solutions

FRANKONIA LABORATORY
Shielded Rooms and Cleanrooms

With its principles of the Faraday cage, Frankonia's major expertise in RF and EMC offers optimized and customized solutions for environments that require an uncompromisingly elimination of interferences. With its scope of shielding rooms, Frankonia focuses on combating against electronic attacks, electric and magnetic interferences, spying and technical eavesdropping, which are related to Data Centre or any IT infrastructures, MRI shielded rooms, MRI suites for cleanroom disciplines and eavesdropping meeting rooms.

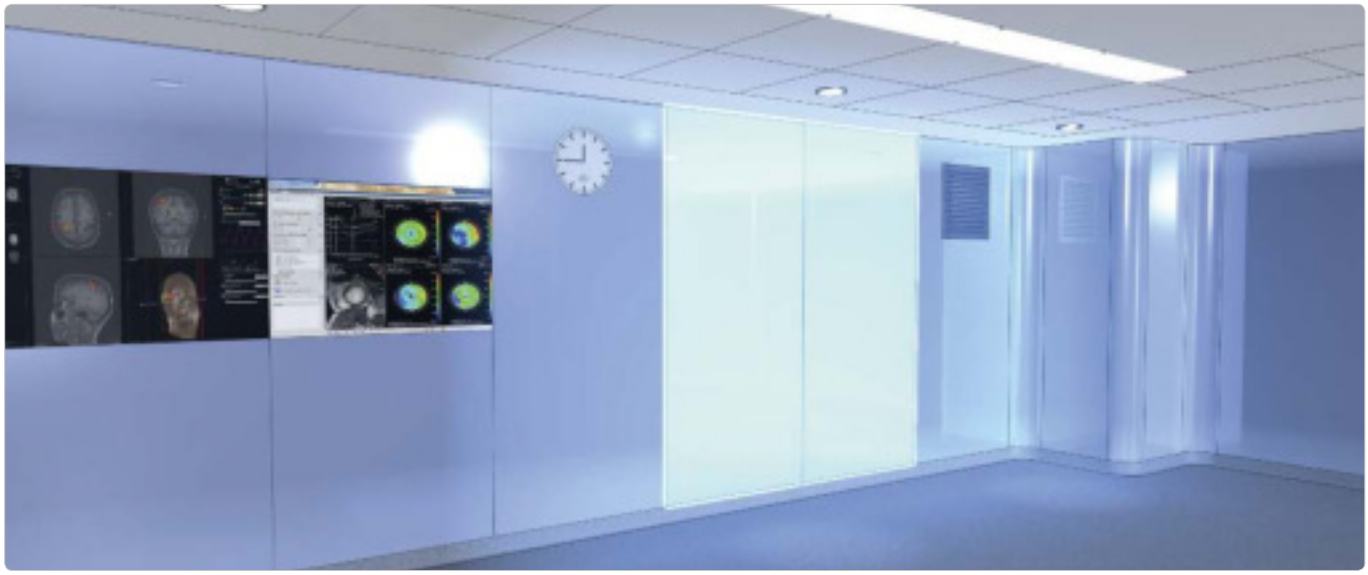
Scope of application

• Shielded Room
Modular high-class RF shielding system including interior, doors, electrical components, feedthroughs and climatization.

• Data Center
Modular high-class RF shielding system including interior, doors, electrical components, feedthroughs and climatization.

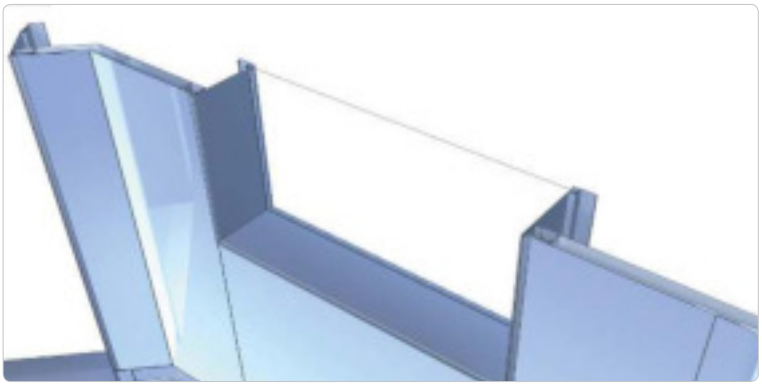
• MRI Shielded Room
Modular high-class RF shielding system including doors, electrical components, feedthroughs and climatization.
Optional interior for any kind of disciplines (incl. cleanroom disciplines).

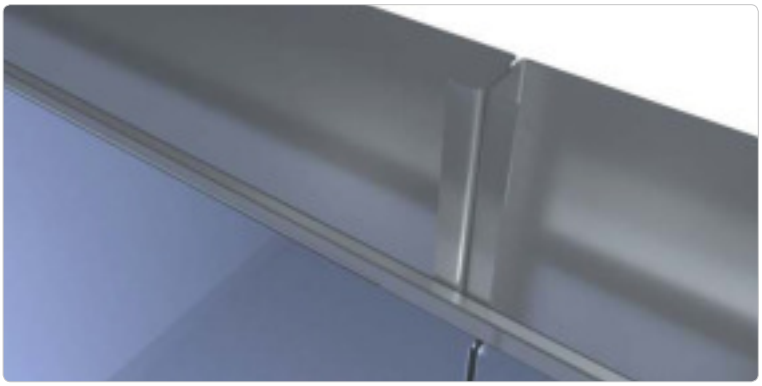
• Eavesdropping (Spy Protective) Meeting Room
Modular high-class RF shielding and appealing interior design, doors, electrical components, furniture, feedthroughs and climatization.



Scope of delivery

- Modular and prefabricated high-class RF shielding system
- Interior design for walls, floor and ceiling (wall cladding with steel, stainless steel, plasterboard, PVC, HPL, glass or LED illuminated glass), sound absorption and ambient light functions
- Optional radiated shielding
- Doors in manual or automatic mode with interlock (hinged or sliding version)
- Window systems for RF or radiated protection
- Electrical components and installation (electric distribution, LED or halogen illumination, and battery buffer)
- High-class power line filters (single-phase or three-phase; 1A up to 800A), 100 dB from 14 kHz up to 40 GHz
- High-class data line filters and signal line filters
- Fiber-optic converters (RS-232, RS-485, RJ-45, USB)
- Monitoring equipment (video and audio)
- RFI Trap feed-through for non-standard shielded cables
- Feed-through (fiber optics, compressed air, gases, water and oil) and several connectors (e.g., coaxial)
- Complete ventilation and Air Conditioning systems incl. HEPA filters
- Honeycombs from 10 kHz up to 40 GHz
- Fire or gas detection systems, and sprinkler systems
- Customizable products and turnkey solutions





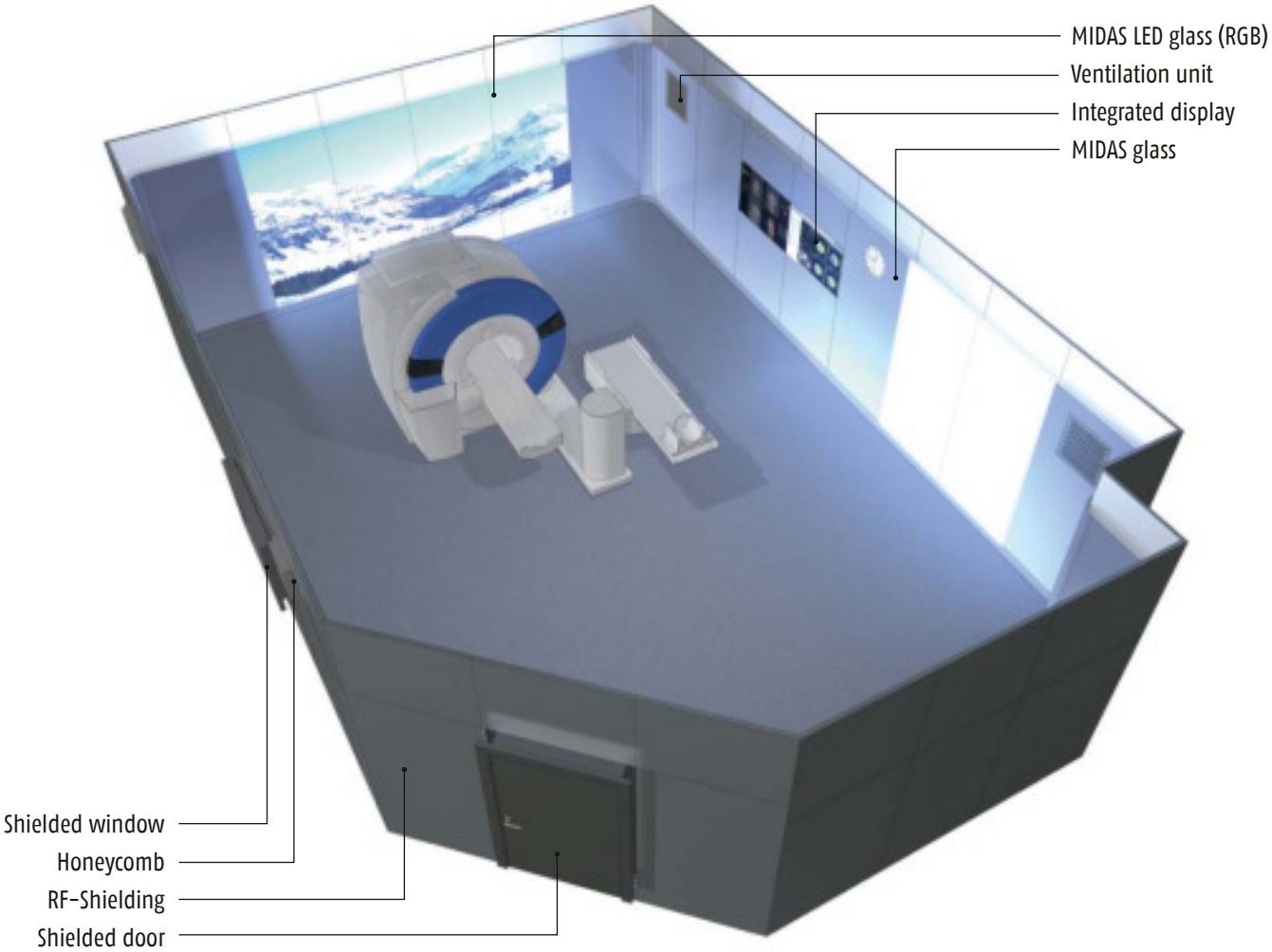
Products

Shielded doors
- RF-Shielded hinged or sliding doors
- RF-Shielded gates and lifting ramp or platfrom
- Standard hinged or sliding doors, e.g., cleanroom

Shielding windows
- RF-Shielded window
- Standard window systems

Shielding rooms
- RF-Shielding (modular)
- Internal cladding acc.to customers' demand
  - .MIDAS Glass
  - .MIDAS LED Glass (RGB)
  - .MIDAS Steel
- Feed-through components
- Ventilation, LAF, HEPA filter and A/C
- Electrical integration and filters
- Furniture

Frankonia Turnkey Solutions



FRANKONIA LABORATORY
Biosafety and Cleanroom Laboratories

Based on Frankonia's expertise in shielded rooms and solutions, the biosafety and cleanroom laboratory scope is designed on the same principles that guarantee hygienic safety and offer additional RF protection. With Frankonia's scope of laboratory, the focus is on modular room systems with specific high-class technology and quality standards that relate to cleanroom, hygienic and biosafety applications.

Scope of application

• Cleanroom, Sterilization and Pharmacy Laboratory in Hygienic Quality Level BSL-0, BSL-1 & BSL-2
Modular shielding system including interior, doors, electrical components, feedthroughs and climatization.
Optional high-class RF shielding.

• High-security and Biosafety Laboratory in Hygienic Quality Level in BSL-3 & BSL-4
Modular shielding including doors, electrical components, feedthroughs and climatization.
Optional high-class RF shielding.

• Transportation Systems for High-security and Biosafety Applications
Mobile container laboratories.
Transportation containments for infected materials and people for truck, train, boot or plane.

Single Products

Gas-tight doors
- Gas-tight doors with compressed sealing (with/without threshold)
- Gas-tight doors with inflatable sealing (IFS)
- Gassing sluice

Materials lock system (material sluice)
- Pass-through materials lock
- Gassing materials lock
- Immersion materials lock
- Combination lock

Manlock systems (personal sluice)
- Chemical shower
- Air shower

Complete Solutions

Biosafety rooms
- BSL-0, BSL-1, BSL-2, BSL-3 and BSL-4 containment in stainless steel
- Mobile Container Solutions
- MIDAS wall system
- Internal cladding acc.to customers' demand
- Feed-through components
- Ventilation, HEPA filter and A/C
- Electrical integration and filters
- Furniture, e.g., dissecting table

Frankonia Turnkey Solutions

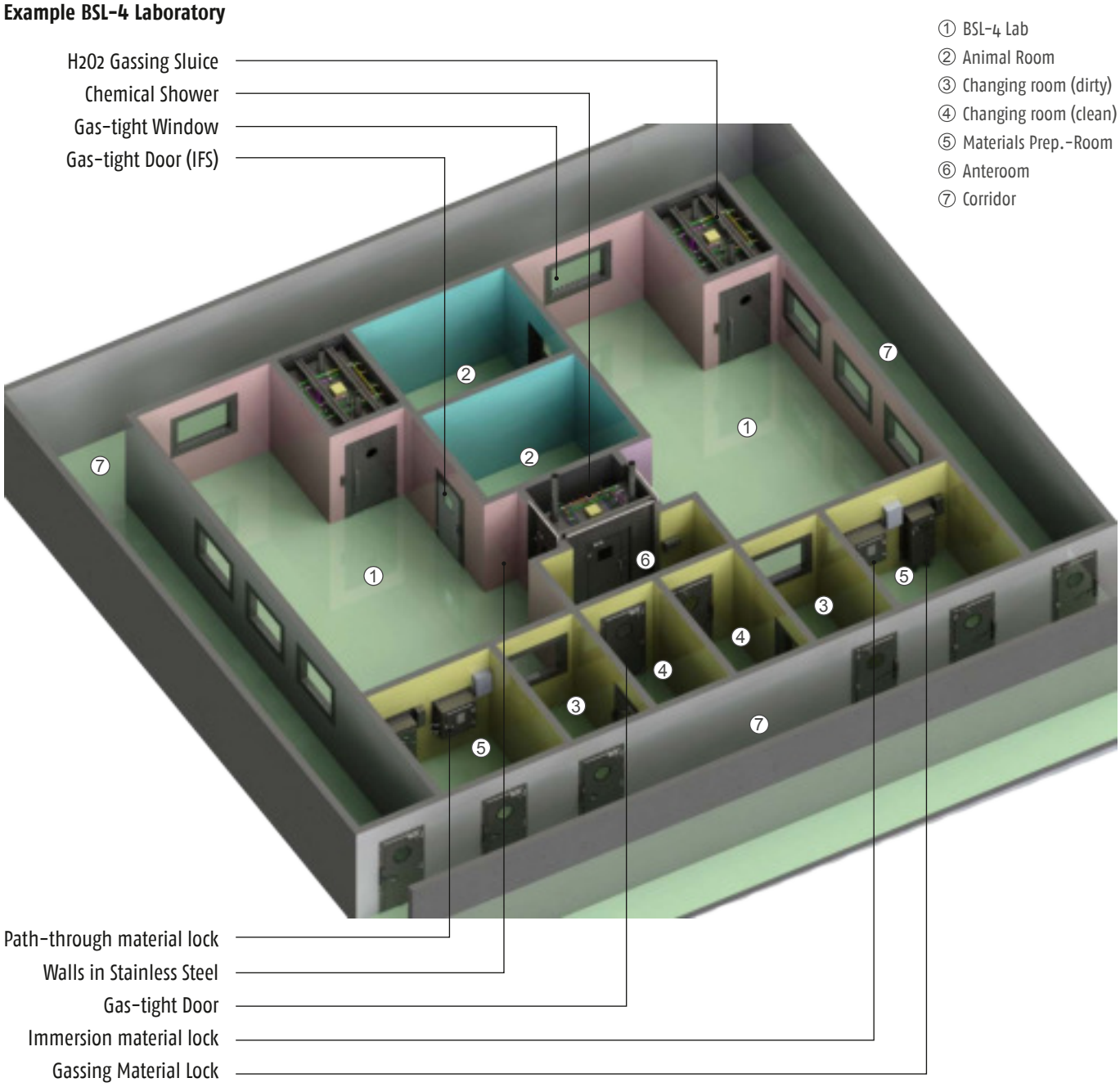
Scope of delivery
- Modular and prefabricated room system
- Interior design for walls, floor and ceiling
- MIDAS wall cladding with steel, stainless steel, PVC, HPL, glass or LED illuminated glass), sound absorption and ambient light functions
- Hygienic cleanroom applications up to BSL-4 level for walls, ceiling and floor
- Optional radiated shielding
- Doors in manual or automatic mode with interlock (hinged version)
- Gas-tight doors
- Biosafety rooms
- Manlock systems (personal sluice)
- Materials lock system (material sluice)
- Optional all rooms built as RF-shielding
- Window systems standard, option for RF or radiated protection
- Electrical components and installation (electric distribution, LED or halogen illumination and battery buffer)
- Monitoring equipment (video and audio)
- Feed-through (fiber optics, compressed air, gases, water and oil) and several connectors (e.g., coaxial)
- Complete ventilation and Air Conditioning systems incl. laminar-air systems (LAF)
- Fire or gas detection systems, and sprinkler systems
- Customizable products and turnkey solutions

Biosafety Solutions

Frankonia's laboratory solution provides customized projects due to our customers' demands and specifications. Overall, that includes:

- Mobile (transferable) or building solutions
- Isolation stations and cleanrooms
- Bisosafety laboratories in class BSL-3 and BSL-4
- Single products or complete solutions

Example BSL-4 Laboratory

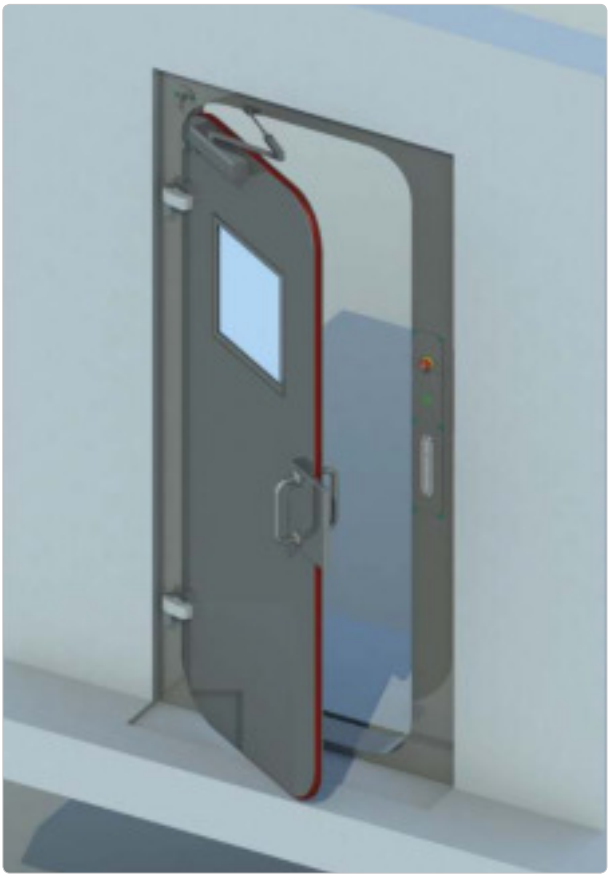


Compliance

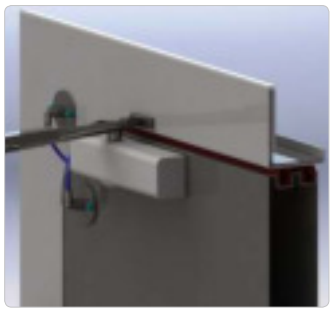
Frankonia's laboratory related system is compliant with the laboratory hygiene requirements, according to BGA instructions: identification, prevention and control of laboratory infections. The internal cladding materials that are used are resistant to the common laboratory cleaning agents (DGHM), germicides, water, steam and acetic acid.

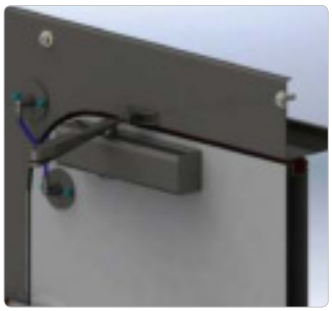
GAS-TIGHT DOORS
Gas-tight doors with inflatable sealing (IFS)

Our doors are designed for use in laboratories BSL3 + BSL4 (barrier-free passage). They offer very good resistance to all the common detergents, solvents and disinfectants and they are non-sensitive to chemical and thermal effects.
The Frankonia Inflatable Seal door is used primarily in high containment situations such as BSL- laboratories, pharmaceutical or medical clean rooms. The seal allows high tightness, also during decontamination and fumigation processes.



Highlights
- High quality standards
- Flexible configurations and building adaptation
- Modular system offering functional extension
- Long-life construction
- Bassier-free access
- Gas-tight connection to the building
- Leak tightness tested and documented with test certificate





Design
Frame
The door frame consists of a stainless steel frame and a strong subframe. The magnetic lock, the control elements and the status display are integrated in the door frame.
Designed for a barrier-free passage

Gastight qualities
Gas-tight up to pressure ± 500 Pa (accredited)
Pressure decrease <50Pa within 20mins
Temperature resistant from −40°C to +100°C

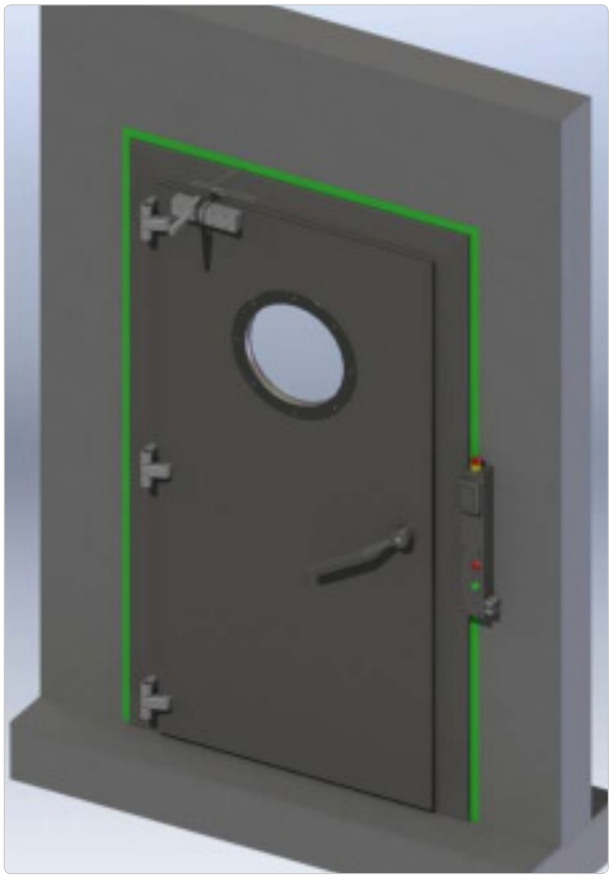
Leaf
The door leaf is manufactured without visible joints in the front area.
In the door leaf is a circumferential inflatable seal inserted.
The door leaf is equipped with:
- 2 pieces of 2D adjustable stainless steel hinges,
- 2 pieces handles

Material + Surface
V2A, Stainless Steel 304, (1.4301), grinded and brushed (Ra <0,8µm)
V4A, Stainless Steel 316L, (1.4404), grinded and brushed (Ra <0,8µm)
Inflatable Seal: Silicon (Standard), FKM (Viton) (Option)

Standard Equipment
- Pneumatic-Panel
  The door is equipped with control-cabinet, valves for inflate / deflate the seal, prewired for connection with the BMS.
  The pressure in the seal is monitored.
- Emergency release on both sides
  The door is equipped with emergency-switch on both sides.
- Inspection window
  Integrated planar window 400mm x 400mm
- Electrical Lock
  The door is equipped with door-open-switch on both sides (with status lights) and electromagnetic lock (Stand Alone System)
- BMS interface (fire central)
  Status of the door will be transmitted.
- Automatic door closer
  The door is equipped with automatic door closer

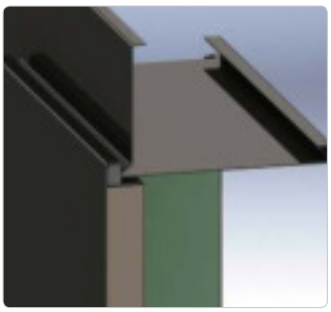
Gas-tight doors with compressed sealing

Our doors are designed for installation in disinfectable hygienic areas. They offer very good resistance to all the common detergents, solvents and disinfectants and they are non-sensitive to chemical and thermal effects.



Highlights

- High quality standards
- Flexible configurations and building adaptation
- Modular system offering functional extension
- Long-life construction
- Gas-tight connection to the building
- Leak tightness tested and documented with test certificate



Design

Frame

- Corner frame for brickwork
- Block frame for tiled wall
- Surrounding frame for wall system

Gastight qualities

Gas-tight up to pressure ± 500 Pa (accredited)
Pressure decrease <50Pa within 20mins
Temperature resistant from −40°C to +100°C

Leaf

Designed as sandwich construction, with a solid, shock-resistant centre. The required surface material is glued on the door using a special method. The door leaf is manufactured without visible joints in the front area. In the door leaf is a circumferential seal inserted.
The door leaf is equipped with:

- 3 pieces of 2D adjustable stainless steel hinges,
- Central locking lever on both sides, with adjustable latch.

Material + Surface

V2A, Stainless Steel 304, (1.4301), grinded and brushed (Ra <0,8µm)
V4A, Stainless Steel 316L, (1.4404), grinded and brushed (Ra <0,8µm)

Chemical resistance

In the standard configuration, the gastight door is resistant to all conventional cleaning agents according to DGHM-list. It is also resistant to formalin and H202 fumigation as well as to UV-C radiation for decontamination works.
If more aggressive agents like peracetic acid should be used, the door can also be designed with AISI 316L material.
The selection of the material depends on the customer's requirements.

Options for gas-tight doors

Options gas-tight doors with compressed sealing

- Electrical lock
  The door is equipped with door-open-switch on both sides (with status lights) and an electromagnetic lock (Stand Alone System).
- Access door control
  Access door control with card reader and password
- Emergency release on both sides
  The door is equipped with emergency-switch on both sides.
- Inspection window
  Integrated planar window 400mm x 400mm
- Electrical Interlocking
  Two doors are connected. If one door opens, the other door is closed. The doors are equipped with two door-open-switch (with status lights), an Electromagnetic lock and a control-system (integrated in the door frame)
- BMS Interface (fire central)
  Status of doors will be indicated.
- Building adaptation
  The door can be adapted to the requirements of each project.

Options gas-tight doors with inflatable sealing (IFS)

- Control-System
  The door is equipped with control-cabinet, valves for inflate / deflate the seal.
- Double Inflatable seal (for backup)
  The door is equipped with two inflatable seals. The door will also receive a second seal including a second independent pneumatic line.
- Material Inflatable Seal
  FKM = Flourkarbon-Kautschuk (Viton)
- Building adaptation
  The door can be adapted to the requirements of each project.
- Interlocking
  Two doors are connected by the control-system. If one door opens, the other door is closed. The doors are equipped with two door-open-switches (with status lights), an electromagnetic lock and a control-system.
- Material V4A
  V4A, Stainless Steel AISI316L, (1.4404), grinded and brushed (Ra <0,8µm) (Option)

Alternative
Double-door combined as gassing sluice

Gassing sluice

The gassing sluice is used for the controlled inward transfer of products into laboratories, pharmaceutical production rooms and life science production facilities. At the same time, this unit separates the cleaned, sterile area from the contaminated, infected one. Due to the large scope of options, the gassing sluice built as material sluice can be integrated in clean rooms with minor safety requirements up to rooms with highest requirements.

Highlights

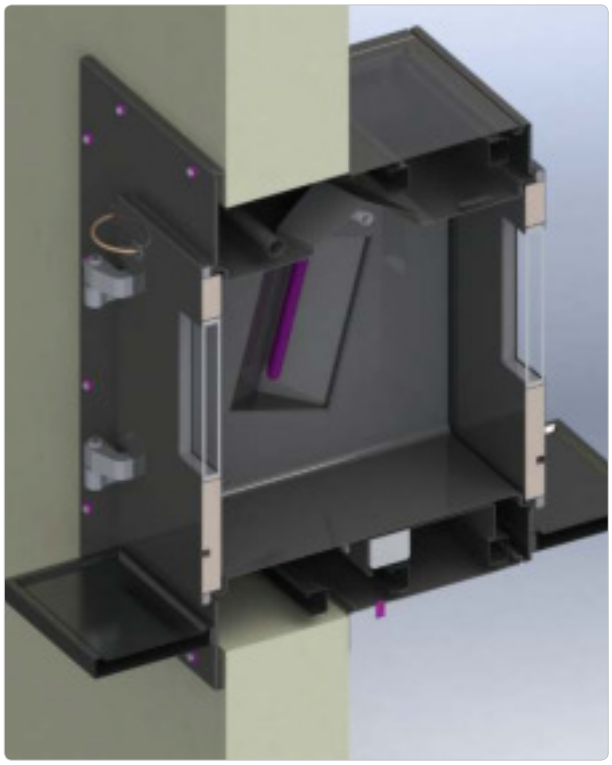
- Option for large items (e.g. animals, or trolleys)
- Flexible configurations and building adaptation
- Modular system offering functional extension
- Long-life construction
- Gas-tight connection to the building
- Leak tightness tested and documented with test certificate
- Full flexibility and future-proof

MATERIAL LOCK SYSTEM
Pass-through materials lock

The pass-through material lock called FTH (Frankonia Transfer Hatch) is used for the controlled inward transfer of products into labors, pharmaceutical production rooms and life science production facilities. At the same time, this unit separates the cleaned, sterile area from the contaminated, infected one. Due to the large scope of options, the material sluice can be integrated in clean rooms with minor safety requirements up to rooms with highest requirements.

The sluice will be delivered as a complete unit. It has a double-leaf construction and consists in one self-contained sluice body, 2 gas-tight hinged doors with mechanical seal and one casing made of fitted cover sheets. These sheets will be mounted on site and sealed together. Gas-tight design of the inner shell according to test certificate. Sluice body, casing and doors are made of polished and brushed stainless steel.
On the clean room side, the enclosed inner shell allows the tight integration of the sluice body into the wall; it can be installed into an existing prepared concrete wall as well as into an adjustable wall system.

The sluice is provided with an interlock control system which prevents that both doors could be opened at the same time, and hence will allow a passage between contaminated to uncontaminated area. In the standard configuration, the interlocking device is delivered with normally open function. On request it can be also provided with normally close function.



Highlights
- High quality standards
- Flexible configurations and building adaptation
- Modular system offering functional extension
- Long-life construction
- Gas-tight connection to the building
- Leak tightness tested and documented with test certificate

Design
The stainless steel inner chamber with its fixtures and fittings is gas-tight and resistant to all common disinfectants as well as to hot water/steam at a temperature up to 90°C. The interior of the chamber is smooth and has no hollow which could cause remainders of germ; thus it complies with the GMP guidelines.
The design ensures excellent gas tightness and high degree of resistance to distortion.

Standard Types
The material lock FTH is available in the standard dimensions W x H = 600x600mm, 600x900mm and 800x800mm with a standard construction depth of 600mm. Alternatively the sluice can also be delivered with a construction depth of 800mm.
As an option, the material sluice can be modified in accordance to the individual customer requirements relating to dimensions, fitting and door control system.

Standard Types						
Type	Inner dimension (mm)			Overall dimension (mm)		
	Width	**Height**	**Depth**	**Width**	**Height**	**Depth**
FTH-6/6/6	600	600	600	890	890	645
FTH-6/9/6	600	900	600	890	1190	645
FTH-8/8/6	800	800	600	1090	1090	645
FTH-6/6/8	600	600	800	890	890	845
FTH-6/9/8	600	900	800	890	1190	845
FTH-8/8/8	800	800	800	1090	1090	845

Options for pass-through materials lock

Materials & Engineering

Casing
Casing is made of stainless steel fitted cover sheets which will be mounted on site and sealed together.

Display and operating elements
The door status display and if required the request button as well as the emergency release button are integrated in the door frame and can be also maintained from the operating side. Cable feed is carried out from the frame back side via a gas-tight assembled housing.

Leak tightness / Air leak rate
The sluice chamber is gas-tight up to a pressure of ±500 Pa at a pressure drop < 10 % over a period of 20 min (Test certificate of 06.11.2012).
The structure is resistant to temporary pressure peak up to ±2500Pa.

Material and surface
Standard configuration: Stainless steel AISI 304 (1.4301), polished (surface roughness Ra<0,8µm)
Option: Stainless steel AISI 316L (1.4404), polished (surface roughness Ra<0,8µm)

Sluice body
Continuously welded stainless steel construction with a material thickness t=2,0mm. Fitting options are welded or assembled gas-tight according to the specifications

Door leaf
The door leaf is consisting of stainless steel cover sheets, a core and sealing profile. The door leaf is equipped with a lever handle for locking and a viewing window made of insulating glass unit. Interlocking system mounted in the door leaf. An inspection cover is provided to allow servicing works of the door.

Chemical resistance
In the standard configuration, the material sluice is resistant to all conventional cleaning agents according to DGHM-list. It is also resistant to formalin and H2O2 fumigation as well as to UV-C radiation for the decontamination works.
If more aggressive media as peracetic acid should be used, the sluice can also be designed with AISI 316L material.
The selection of the material depends on the customer's requirements.

Sluice Control
In the standard configuration, a simultaneous door interlocking system is provided; this system is integrated in the material sluice. Further specifications require a control system in a separate control panel.

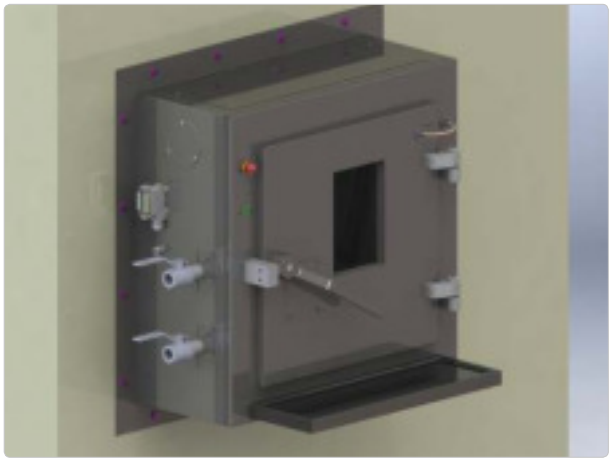
Standard control system
- In standby mode, both doors are unlocked (NO). One of the sluice doors can be opened with the lever handle. Both door status displays indicate "GREEN".
- By opening one of the doors, the opposite door will be locked and its LED will switch to "RED".
- The opened door will switch to „ORANGE".
- When the opened door will be closed again, the opposite door will be unlocked and both status displays will indicate „GREEN".

Special design (according to customer's requirements
- Door interlocking system with normally close (NC) function
- Timer for interlocking system
- Emergency release button
- Door release via key code
- Touch panel system for free programming of interlocking cycles, passwords in separate control panel

Interlock & Fumigation
Interlocking NC
In standby mode, both doors are locked (NC). The sluice cannot be opened. Both door status displays indicate "GREEN".
By activating a request button, the locking system will be released. By releasing one of the doors, the opposite door will remain locked and its LED will switch to "RED". The deblocked door will switch to "flashing green". The door can be opened via the lever handle. The opened door will switch to „ORANGE".
When the opened door will be closed again, it will be locked and both status displays will indicate „GREEN".
IMPORTANT: If the request button has been activated and the requested door has not been opened with the lever handle, the opposite door will remain locked until the requested door will be opened and closed again.

Fumigation connections
- For the decontamination of materials passing in and out through the sluice
- Piping of the material sluice including cut-outs in the inner shell
- Piping of the gas supply and return circuit integrated in the sluice partition wall
- 2x mechanical ball valves with threaded end Rp 1 ¼". Threaded end for the fixation of one Camlock or Triclamp connecting sockets. These sockets are supplied by the customer (depending on generator and user)
- Signal transmission of the sluice control system to the gas generator indicating that both sluice doors are closed (via Harting plug at the material sluice)
- Generator will send a signal to the sluice control system indicating that the fumigation cycle is finished. Then the normal control will be transferred on-site to the material sluice (via Harting plug at the material sluice)
- Signal processing and fumigation supplied by the customer
- Cycle development supplied by the customer
- Program upgrade for fumigation

Fitting Options



Material
Standard material quality: Stainless steel 1.4301, AISI 304
Optional: Stainless steel 1.4404, AISI 316L

Shelf
- Shelf under sluice door, storage depth ca. 200 mm
- Storage surface with high edges
- Total depth ca. 240mm

Leak tightness test device
- Device for testing the leak tightness of the sluice chamber
- 1x nipple with cover for connecting a bellow, integrated in the door frame
- 1x nipple 6mm in the sluice chamber
- 1x pressure difference display mounted in an external housing
- Hose system

Interlocking NC with timer
If the requested door will not be opened after 8 sec., the door will be locked again and the status display will change.

Lighting
- To provide light in the sluice chamber in poor lighting conditions.
- 1x LED/Halogen bulb Down lighting
- Timer and program update
- Lights maintenance must be made from the unclean area side

Ventilation
- For ventilation and aeration of the sluice chamber: installation of a pressure cascade clean -> unclean
- 2x nipples for on-site air connection DN 80.
- Connecting piping, valves, HEPA-Filter etc. are supplied by the customer.
- 1x nipple 6mm in the sluice chamber for pressure monitoring,
- Hose system, pressure can, connection, control system are supplied by the customer.
- Ventilation connection and ventilation control system are supplied by the customer.
- Message to BMS (building management system) about door status => at door opening, freeze of the ventilation status (supplied by customer).
- Message from BMS (building management system) to sluice control system about pressure conditions
- Program upgrade for ventilation

UV-Decontamination as standard procedure
- After each opening of the door on the labor side, the sluice chamber will be irradiated.
- 3x UV-lamp 10W 24V DC with power supply
- Wave length 254 nm, mounted on the both sides and on the ceiling of the chamber
- Maintenance made from the unclean area side. The inspection cover at the material sluice allows this maintenance
- Timer

UV-decontamination (if necessary)
- UV-Decontamination will be selected via a request push-button
- 1x request push-button
- 3x UV-lamp 10W 24V DC with power supply
- Wave length 254 nm, mounted on the both sides and on the ceiling of the chamber
- Maintenance made from the unclean area side. The inspection cover at the material sluice allows this maintenance
- Timer

Emergency unlocking system
- The emergency unlocking system releases the locking system. Both doors can be opened at the same time. The barrier function of the sluice is not active.
- 2x emergency release buttons, each integrated in the door frame (behind gas-tight box)

Permanently pressure display
- Display of the pressure difference of the sluice chamber to adjacent rooms
- 1x nipple 6mm in the sluice chamber
- 2x external housing, each equipped with 1x pressure difference display
- Hose system

Control-System
- This option is necessary for the control of the options given below.
- 1x control cabinet, 1x SPS
- Control cabinet and SPS adjusted to the options given below
- The control cabinet is fully wired, ready for connection and tested.
- Including software and programming
- Including interfaces, electrical wiring diagrams and function description

MATERIAL LOCK SYSTEM
Immersion material lock

The immersion sluice is an important part of a laboratory area. On the one hand, it functions as a sluice between contaminated and uncontaminated areas. On the other hand it ensures by using their disinfection process, reliable cleaning of submerged materials.
The Dunk-Tank-Sluice is a complete component which is gastight with the building connected. All materials used are resistant to the usual cleansing agents and germicides used in cleaning laboratory areas. Not sensitive to chemicals and thermal effects (hot steam and hot water).

Highlights
- High quality standards
- Flexible configurations and building adaptation
- Modular system offering functional extension
- Long-life construction
- Gas-tight connection to the building
- Leak tightness tested and documented with test certificate

Design
The stainless steel inner chamber is gas-tight and resistant to all common disinfectants as well as to hot water/ steam at temperatures up to 150°C. The interior of the chamber is smooth and has no hollow which could cause remainders of germ; thus it complies with the GMP guidelines. The design ensures excellent gas tightness and a high degree of resistance to distortion.

Sluice body
Continuously welded stainless steel construction.
Fitting options are welded or assembled gas-tight according to the specifications. The dimensions of the chamber can be adapted to the respective requirements of each project.

Door
The door leaf consists of stainless steel cover sheets. The Doors are equipped with compression seal. The door leaf is equipped with a handle and a viewing window made of an insulating glass unit.
The door frame consists of stainless steel with a strong sub-frame.

Leak tightness / Air leak rate
The sluice chamber is gas-tight up to a pressure of ±500 Pa at a pressure drop < 10 % over a period of 20 min. The structure is resistant to temporary pressure peaks up to ±2500 Pa.

Casing
Casing is made of stainless steel fitted cover sheets which will be mounted on site and sealed.

Chemical resistance
In the standard configuration, the material sluice is resistant to all conventional cleaning agents according to DGHM-list. It is also resistant to formalin and H202 fumigation as well as to UV-C radiation for decontamination works.

Material and surface
Standard configuration: Stainless steel AISI 304 (1.4301), polished (Ra<0,8µm)
Option: Stainless steel AISI 316L (1.4404), polished (Ra<0,8µm)

Options

- Interlocking-System
  As soon as one of the two sluice doors is opened, the other door is automatically locked. However, both doors are never blocked at the same time.
- Liquid-Level-monitoring (incl. Level-Indicator)
  Measure the liquid in 3 levels (high, middle, low) and give signal to the control system.
  The 3 levels are adjustable.
- Sluice lighting
  Provide light in the sluice chamber in poor lighting conditions. When the door is open the light is shining.
- Control via Touch-Panel
  For viewing and setting all the parameters (decontamination-time, liquid-levels, light ...).
- Uninterruptible Power Supply (UPS); Control program Options
  All functions can be adapted to the project's requirements.
- Emergency Unlocking
  In case of emergency, both doors can be opened simultaneously by pressing an emergency button. There is an emergency button on the outside of both doors.
- Control System
  The control system unit consists of a control-cabinet and a PLC. The cabinet is completely ready for connection on site, wired and tested.
  The control-system has a Web-Interface for setting all the parameters (decontamination-time, liquid-levels, light ...).
- Automatic inflow, drain and overflow (incl. valves and pipes)
  For the automatic level regulation. Includes 3 electrical ball valves with complete piping.
- Fumigation connections
  For the decontamination with H2O2. Piping of the gas supply and return circuit integrated in the sluice partition wall. 2x mechanical ball valves with 1 ¼"- thread (for the fixation of one Camlock or Triclamp connecting sockets).

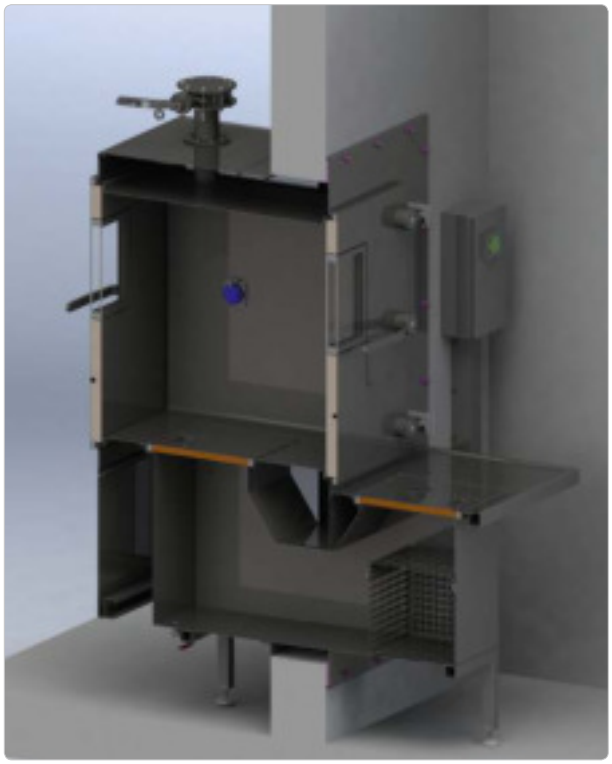
Alternative
Combination materials lock

Combination material lock

The combination material lock is a special version of the standard pass-through material lock system and the immersion material lock system, combined in a single solution.
This solution give our customer the full flexibility to feed-through materials in different methods.

Highlights

- High quality standards
- Flexible configurations and building adaptation
- Modular system offering functional extension
- Long-life construction
- Gas-tight connection to the building
- Leak tightness tested and documented with test certificate
- 2 different feed-through methods in one solution
- Use as pass-through materials lock system, or
- Use as immersion material lock system
- Full flexibility and future-proof



MANLOCK SYSTEM
Personal sluice, air shower, and chemical shower

Personnel sluices in laboratory areas serve as separation between contaminated and uncontaminated sections within the unit (sluice function). They ensure that the personnel have to pass through the shower unit and thus are thoroughly clean and free from infectious germs and viruses. Consequently, the lab personnel are clean when entering and leaving the containment area.
The personal sluices consist of two gastight wing doors with a shower (designed as a wet shower) in between. The locking system of both gastight wing doors is linked to the shower operation program. The functions can be adapted to the requirements of each project.

Highlights
- High quality standards
- Flexible configurations and building adaptation
- Modular system offering functional extension
- Long-life construction
- Gas-tight connection to the building
- Leak tightness tested and documented with test certificate

Design
The stainless steel inner chamber with its fixtures and fittings is gas-tight and resistant to all common disinfectants as well as to hot water/ steam at temperatures up to 150°C. The interior of the chamber is smooth and has no hollow which could cause remainders of germ; thus it complies with the GMP guidelines. The design ensures excellent gas tightness and a high degree of resistance to distortion.

Sluice Body
Continuously welded stainless steel construction. Fitting options are welded or assembled gas-tight according to the specifications. The dimensions of the chamber can be adapted to the requirements of each project.

Door
The door leaf consists of stainless steel cover sheets. The Doors are available with compression seal or with inflatable seal. The door leaf is equipped with a handle and a viewing window made of an insulating glass unit. The door frame consists of stainless steel with a strong subframe. The door can be adapted to the requirements of each project.

Chemical Resistance
In the standard configuration, the material sluice is resistant to all conventional cleaning agents according to DGHM-list. It is also resistant to formalin and H202 fumigation as well as to UV-C radiation for decontamination works. If more aggressive agents like peracetic acid should be used, the sluice can also be designed with AISI 316L material.
The selection of the material depends on customer's requirements.

Casing
Casing is made of stainless steel fitted cover sheets which will be mounted on site and sealed together.

Display and operating elements
The Personal Sluice is equipped with two touch panels, one on the lab side and one on the aisle side. They are designed to set parameters (pressure, concentrations), shower time, exposure time, drying time, etc. It shows all relevant data such as door status, lock status, pressure, levels, etc. The functions can be adapted to the requirements of each project.

Material and surface
Standard configuration: Stainless steel AISI 304 (1.4301), polished (Ra<0,8 µm)
Option: Stainless steel AISI 316L (1.4404), polished (Ra<0,8 µm)

Leak tightness / Air leak rate
The sluice chamber is gas-tight up to a pressure of ±500 Pa at a pressure drop < 10 % over a period of 20 min. The structure is resistant to temporary pressure peaks up to ±2500 Pa.

Control System & Options

Interlocking-System
As soon as one of the two sluice doors is opened, the other door is automatically locked.

Emergency Unlocking
In case of emergency, both doors can be opened simultaneously by pressing an emergency button. There is an emergency button on the outside of both doors and one inside the sluice.

Permanently pressure display
- Display of the pressure difference between sluice chamber and adjacent rooms
- Display of the pressure inside the chamber
- Pressure monitoring.

Fumigation connections
For the decontamination with H2O2. Piping of the gas supply and return circuit integrated in the sluice partition wall. 2x mechanical ball valves with 1 ¼"-thread (for the fixation of a Camlock or Triclamp connecting socket). These sockets are supplied by the customer (depending on generator and user).

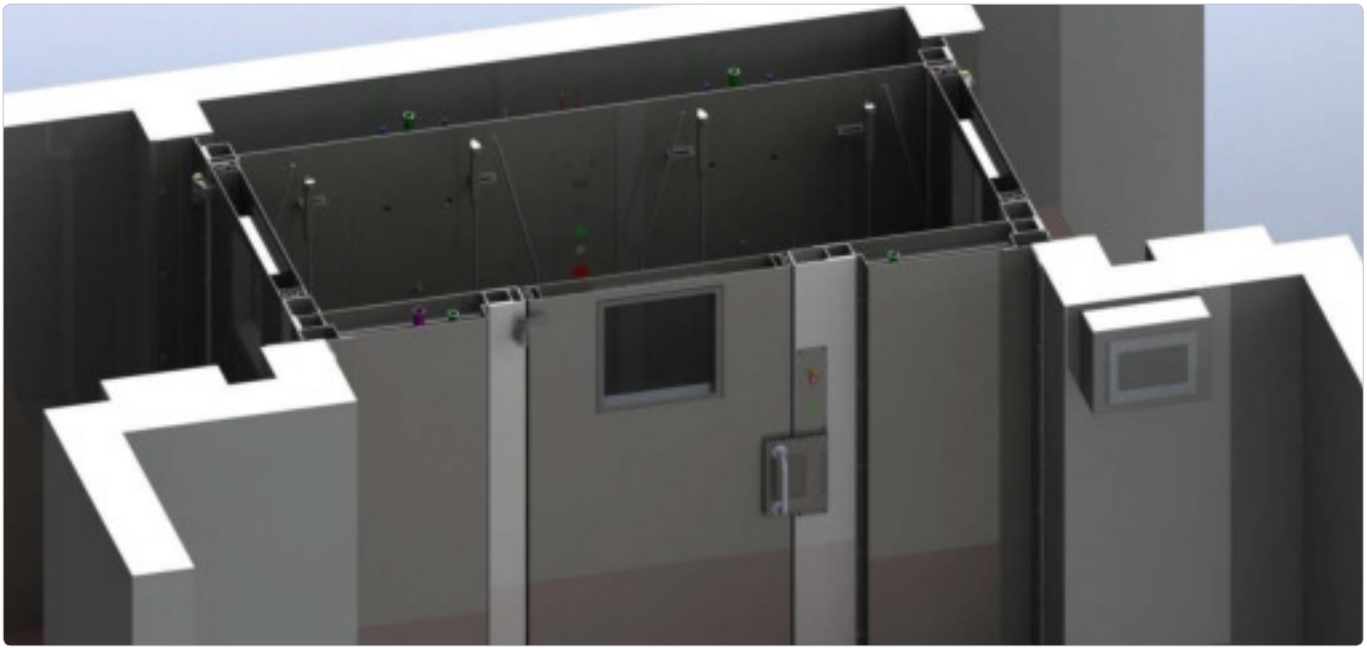
Shower Operation
The number of shower processes can be programmed as required (Chemical-Water-Air). The exit door is unlocked as soon as the last shower operation has been completed.

Electrical power outage / breakdown of control system
In case of electrical power outage or breakdown of the control system, both doors are unlocked. The shower operation is interrupted. Reset of the program.

Ventilation
For ventilation and aeration of the sluice chamber: installation of a pressure cascade clean -> unclean

Pneumatic Floor Drain
In the bottom of the chamber, a gas-tight pneumatic floor drain is integrated.

Control program options
All functions can be adapted to the project's requirements.



FRANKONIA LABORATORY
Mobile Isolation Station

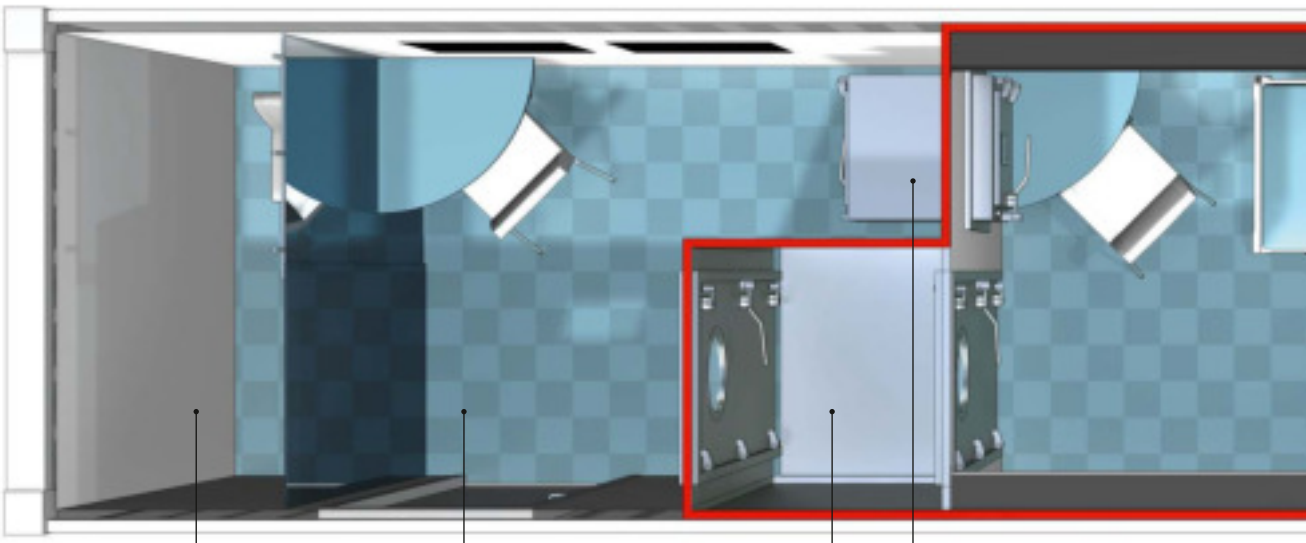
With Frankonia's scope of laboratory, the focus is on modular room systems with specific high-class technology and quality standards that relate to cleanroom, hygienic and biosafety applications. Herewith, we offer mobile containments for any kind of high-security or biosafety applications in which we combine our own expertise in products dedicated to biosafety purposes, but also the expertise of our partners. Therefore, Frankonia and partners provide real total solutions for any discipline and application in mobile solutions for transport or quarantine of infected materials and peoples, adapted to truck, train, boot, or airplane transportation, as well as complete camps.

Emergency Situation

Features

- Frankonia's Isolation Station BSL-0 up to BSL-4
- Prepared for the future
- Made in Germany, adapted to local specifications
- Container version is movable worldwide!
- Customized projects
- Turnkey solutions

Preparation Zone

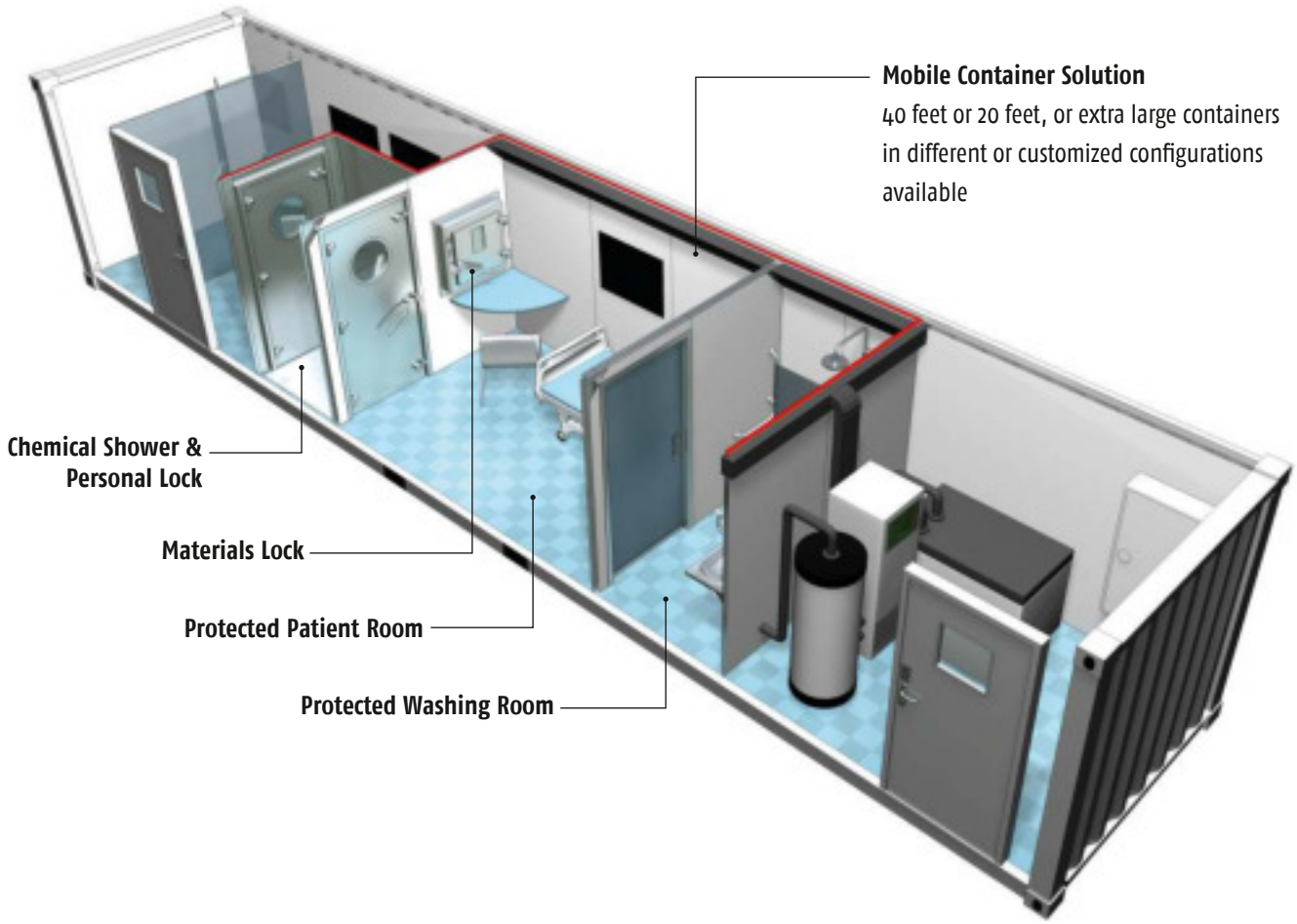


Changing Room and Storage
- Staff clothing
- Protective clothing

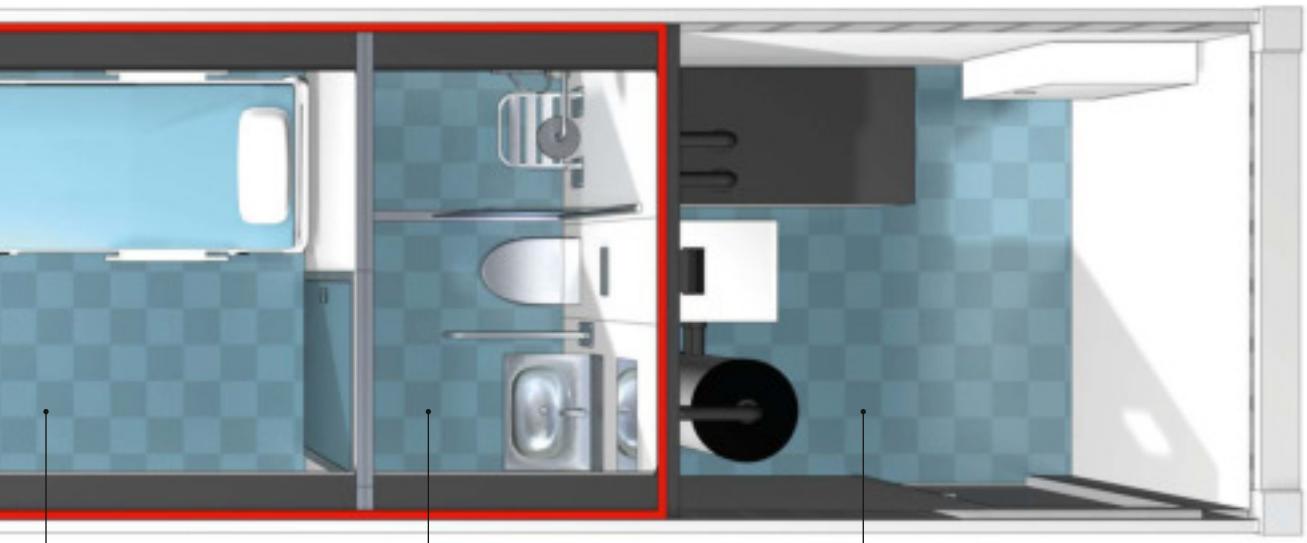
Preparation Room

Materials Lock

Chemical Shower & Personal Lock



Isolation Zone | **Technics Area**



Patient Room

Washing Room

Technical Room
- A/C unit
- Water preparation and sterilization
- Contamination
- Eletric installation

www.frankonia-laboratory.com

FRANKONIA

Frankonia GmbH
Industriestraße 16, 91180 Heideck
Germany
Office: +49 (0) 9177 / 98 - 500
Fax: +49 (0) 9177 / 98 - 520
Mail: info@frankonia-laboratory.com

MADE IN GERMANY