

Concepts

Products

Services



Integrated Solutions for Hospitals and Operating Theatres

Lindner Clean Rooms and Operating Theatres



Lindner

Building New Solutions

Building new solutions.

Lindner undertakes major projects worldwide in all areas of interior fit-out, insulation technology, industrial services and building facades. From pre-planning through to project completion Lindner is your partner of choice.

The Company's extensive manufacturing capability enables quality to be strictly maintained whilst allowing maximum flexibility to meet individual project requirements.

Environmental considerations are fundamental to all Lindner's business principles.

Through partnerships with clients Lindner turns concepts into reality.

Choosing Lindner you have:

Lindner Concepts:
Tailored solutions specifically geared to satisfy individual project requirements

Lindner Products:
Quality materials and systems to the very highest industry standards

Lindner Service:
Comprehensive project management services

Main photo: Siloah Hospital, Hanover

Photo: © samba photography (published with the kind permission of KRH)

The Lindner Health Care System

Do you need a comfortable temperature and soft adjustable background lighting in your operating theatre? Our designs include walls with integrated heating and glass panels with LED lighting for a pleasant working atmosphere.

Whether automatic or manual sliding doors, built-in lights, walls, ceilings, ventilation and air conditioning systems, radiation protection, fire safety or sound insulation – Lindner is a strong partner and a one-stop shop for all-in-one solutions – not only for your operating theatre but also for all other hospital areas.

As general contractor, we take charge of projects through all stages, coordinating all necessary trades and thinking through how we can minimise crossover to maximise efficiency for you. We also arrange the full spectrum of work and services from the technical building systems and plumbing right through to instrumentation, control, electrical, ventilation and air conditioning.



Hamad Medical Hospital, Doha

Benefits at a glance

- Decades of experience in building surgical centres, clean and sterile rooms
- New constructions and refurbishments for the private and public sectors
- Completion of turnkey clinics
- Extensive range of products and solutions to any particular application
- High degree of expertise for hybrid operating rooms and surgical showrooms

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Product Features



RAL colour chart coating



Conductive powder coating



GMP compliance



Easy to clean and disinfect



CE marking in accordance with EU regulation



Fire resistance according to DIN 4102 and EN 13501-2



Sound insulation according to DIN 4109 standard



Hermetic



Pressure-tight



Radiation protection according to DIN 6812 standard



Protection category according to DIN EN 60529



Protection class 1 according to DIN EN 61140



Panic and emergency light function



Lamp included



Electronic ballast or LED driver



Efficiency factor



Power-operated doors



Automatic door systems



Siloah Hospital, Hanover
Photo: © samba photography

Lindner Partition Systems

Flexible, modular and reliable

A flexible, modular partition system is a basic prerequisite in a modern operating theatre. We can offer you the maximum number of different options in terms of high-end wall systems for your project. You may need integrated monitor systems, glazing panels, LED-backlit glass partitions, gas supply, electricity, network services or a customised solution designed entirely to your individual specifications – whatever your requirements, Lindner will provide you with everything you need in a hospital room for processes to run smoothly. The walls can also be supplied in radiation protection and sound insulation quality, and with a number of different surface finishes. We also prioritise the use of clean room silicone for the sealing of wall and ceiling joints.

The room's atmosphere can be controlled by the colour of the partition systems or the lighting. The increasing importance which is being attached to design, ambience and comfort also extends to operating theatres, hospital corridors and patient rooms.



What we offer

- Custom-built partition systems
- Thermowall panels for heated rooms
- Various wall thicknesses to accommodate media supply equipment
- Maximum flexibility and combination options
- Harmonious blend of technology & design
- Fire proofing, sound proofing and radiation protection



Berlin Military Hospital
Photo: © Julia Otto

Logic-OT/Life-OT

The Logic-OT and Life-OT partition systems have been designed specifically for operating theatres. The partitions can be made of various materials, such as stainless steel or HPL. One highlight of this system is the option of integrating the Life-OT coloured glass panel which can be fitted with LED backlighting. All surfaces, joints and points of connection to other parts are designed to facilitate cleaning and disinfection so as to allow top standards of hygiene.

Benefits at a glance

- Meets hygiene requirements
- High degree of flexibility thanks to modularity
- Solid wall panel system based on lightweight construction method
- Facing wall or excess width panels
- Wall heating system (Thermowall)
- Cavity ducting for media network
- Can be combined with various Lindner glazing systems

Panelling types and surface finishes

Logic-OT Metal

- Metal wall panel with electrostatically applied powder coating
- Ground and brushed stainless steel wall lining

Logic-OT HPL CF Board

- HPL on fibre cement base

Logic-OT HPL GF Board

- HPL on gypsum fibre base

Logic-OT HPL Compact

- HPL solid core panel

Life-OT

- Tinted safety glass on gypsum fibre base

Life-OT Graphics

- Safety glass on gypsum fibre base with digital print on back side (choice of photograph or graphic)

Life-OT Ambient Light

- Tinted safety glass on gypsum fibre base with LED light channel

Life-OT Backlight

- Floor-to-ceiling tinted safety glass with full LED backlighting

Life-OT Graphics Backlight

- Floor-to-ceiling tinted safety glass with full LED backlighting and digital print on back side (choice of photograph or graphic)

Technical data

Wall thickness	≥ 100 mm
Standard width (dimension between centre lines)	1,200 mm to max. 1,410 mm (depending on panelling)
Wall heights	Up to max. 5,000 mm
Fire resistance class	F0 F30 under DIN 4102 EI30 under EN 13501-2 EI60 under EN 13501-2
Radiation protection	Customised solutions depending on project specification



KRH Hospital, Nordstadt

Life-0T



The entire surface of the safety glass is bonded with a highly compressed base and can be supplied with a RAL or NCS colour coating on the rear or with a print of your choice. The smooth glass surface makes it easy to clean and disinfect, and it is resistant to the cleaners and disinfectants included in the VAH List.

Benefits at a glance

- Glass surface meets hygiene standards
- High-specification LED lighting technology
- A wide range of individual design options with a selection of colours and motifs
- Pleasant ambience for operating theatre staff



Hamad Medical Hospital, Doha

Life-OT Glass Ambient Light

An LED light channel can be fitted in the partition system running horizontally around the top, middle or bottom.

A wide variety of colour options can be selected with the LED units. The glass panel is made without any additional horizontal joint.

Life-OT Glass Backlight

Life-OT Glass Graphics Backlight

This model is made with laminated safety glass mounted only at the top and bottom in order to guarantee full and entirely consistent illumination of the glass panel. The entire RGB colour range is possible. A wide selection of prints offers unlimited individual design options.





Ludwigsburg Hospital

Photo: © HWP Planungsgesellschaft mbH; photographer: Peter Horn

Logic/Life-Thermowall

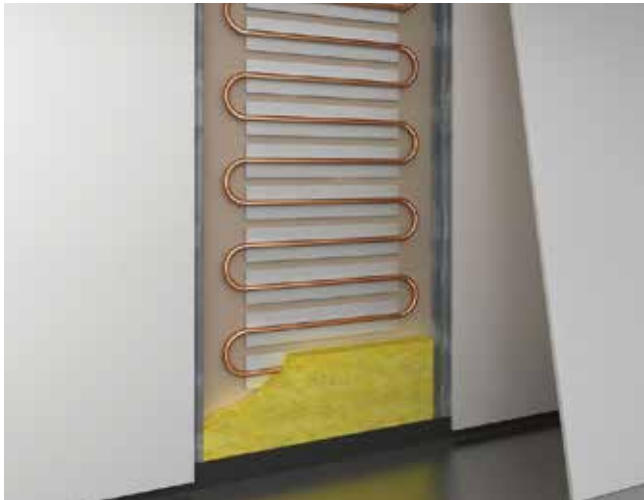
The Lindner Thermowall was specially developed for use in operating theatres and clean rooms. The advantage of this system is the flexibility with which heating can be integrated in the rooms. The system is preferable to a radiator with regard to hygiene because of the smooth non-rippled surfaces. Wall panels fitted with copper dampers at the factory are connected to the heating circuit. Our 24 V/30 V electric heating is an interesting alternative for interim solutions, small spaces or conversions.

Benefits at a glance

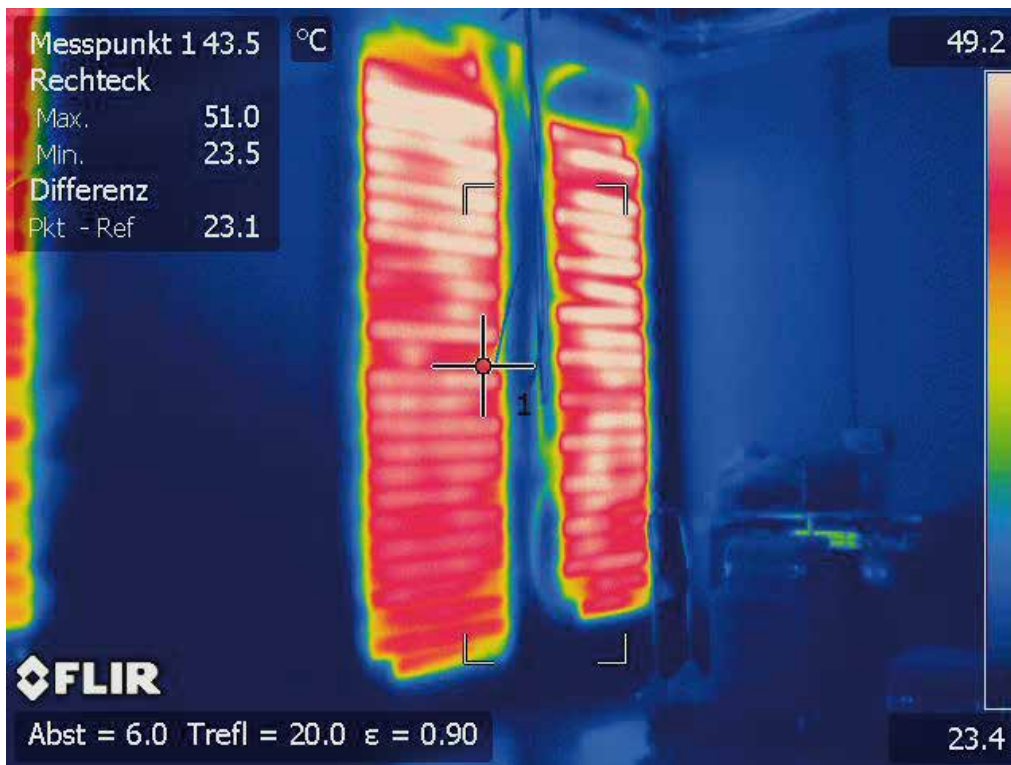
- Meets hygiene requirements
- Tried and tested heating technology
- High degree of flexibility
- Heating provided by hot water or electricity
- Choice of stainless steel, HPL or glass panelling

Surface finishes and panelling types Technical data

- Metal wall panel with electrostatically applied powder coating: Choice of RAL or NCS colours
- Ground and brushed stainless steel
- HPL on base plate, class A building material
- HPL solid core panel
- Glass



Wall thickness	≥ 100 mm
Standard width (dimension between centre lines)	1,200 mm
Wall heights	Up to 3,500 mm
Heating system connection	- Flexible plastic hoses and compression sleeves are used for the connection to the distributing main. Hot water supply temperature up to 50°C. Oxygen barrier conforming to DIN 4726 standard - Optional electric voltage 24 V/30 V
Hot water heat output	Max. 130 W/m ²
Electric heating power	Max. 330 W/m ²
Radiation protection	Customised solutions depending on project specification



Life-OT 137



The Lindner Life-OT 137 consists of two divided aluminium frames with bonded, flush-mounted panels which are fixed in the base support. The unique structural glazing sealant technology developed by Dow Corning obviates the need for edge sealing and is a guarantee of reliable service and long life. The system can be supplied with full glazing, partial glazing or overhead glazing. Electric Venetian blinds or roller blinds can also be easily integrated, as well as radiation shielding glass.

Benefits at a glance

- Structural glazing sealant technology
- Wide range of design options
- Entirely suitable for integration in Lindner Operating Theatre Partition Systems
- Compatible with many different accessories
- Available in toughened safety glass or laminated safety glass
- Changeable transparent/opaque glass



Technical data

Wall thickness	≥ 100 mm
Standard width (dimension between centre lines)	1,200 mm Up to max. 1,500 mm (depending on panelling)
Fire resistance class	F0 F30 under DIN 4102 EI30 under EN 13501-2 EI60 under EN 13501-2
Radiation protection	Customised solutions depending on project specification

Life-OT 137 glazing integrated in Logic-OT Metal





Lindner Door Systems

Flexible, robust, combinable

Door systems designed specially for operating theatres and hospitals are required to meet high demands. That is why we design and develop high-quality, robust doors which meet the required hygiene standards and satisfy the fire safety, smoke control and sound insulation requirements set out in EU directives and DIN standards.

The doors can be fitted with a variety of different switches, sensors and displays and can be integrated in various partition systems.



What you can expect from us

- Automatic or manual sliding doors
- Decontamination barrier function for people and/or beds
- Different door leaf materials
- Integrated Venetian blinds and roller blinds for privacy or laser shielding protection
- Optional combination of swing door and sliding door

Operating Theatre Sliding Doors



Siloah Hospital, Hanover
Photo: © samba photography

Lindner operating theatre sliding doors are designed specifically for use in hospitals and are specifically tailored to the requirements in various areas.

The system may optionally consist of one or two door leaves, be running into the wall or sliding in front of the wall, and be built up to floor-to-ceiling height.

Customised solutions can be devised at any time to meet specific project requirements.

Benefits at a glance

- Meets hygiene requirements
- Numerous design options
- Various types of drives
- Radiation protection, laser shielding and sound insulation
- Option of integrating control and monitoring systems
- Pressure-tight finish

Surface finishes and door leaf materials

- Electrostatically applied powder coating:
Choice of RAL or NCS colours
- Coil coating
- Ground and brushed stainless steel
- HPL custom finish
- Option of glass with digital print



Glazing panel in metal/HPL door leaf

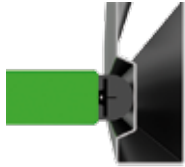
Glazing panel	- Rectangular - Round
Installation alternatives	- With screwed-on trim - Flush fitting without trim
Blackout facilities	- With inside electric Venetian blind - With inside manual Venetian blind - With inside electric roller blind
Special glazing requirements	- Radiation protection - Laser protection

Fittings	Long U-shaped door handle (on one side or both sides) Recessed door handle (on one side or both sides)
Frame/running gear case	
Materials	Galvanised and powder-coated steel sheet Stainless steel, optionally powder-coated
Controls	Buttons* Push-button cleats* Contact-free units* Emergency open button (for decontamination barrier function) Customised solutions to specific requirements * For automatic doors only
Signals	Red/green lights (for decontamination barrier function)
Door drive	
Types of drive	Manual or automatic
Special functions	Decontamination barrier function
Safety measures	
Sensors	Control of door movements in accordance with DIN 18650
Resistance control	Electronic monitoring of resistance (dynamic force limitation) on opening and closing. The door stops and is immobilised as soon as the resistance prescribed in DIN 18650 prevents the movement of the door leaves.

Standard sliding door

Frame design options:

Inset frame



Sound insulating inset frame



37 dB
42 dB

Blind frame

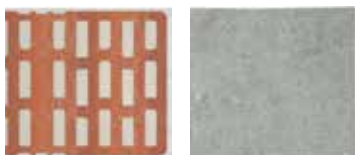


Blind double-leaf frame



Wall design options:

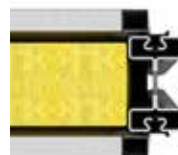
1 Solid wall



2 Lightweight partition wall



3 Logic Life



4 Logic OT
Life OT



5 Hybrid wall





Door leaf design options:

HPL



Metal



Glass & aluminium frame



Fine-framed glass



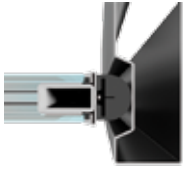
Tubular frame/metal



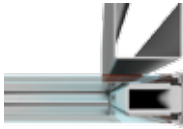
Floor-to-ceiling sliding door

Frame design options:

Inset frame



Blind frame

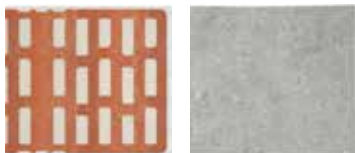


Blind double-leaf frame



Wall design options:

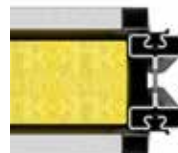
1 Solid wall



2 Lightweight partition wall



3 Logic Life

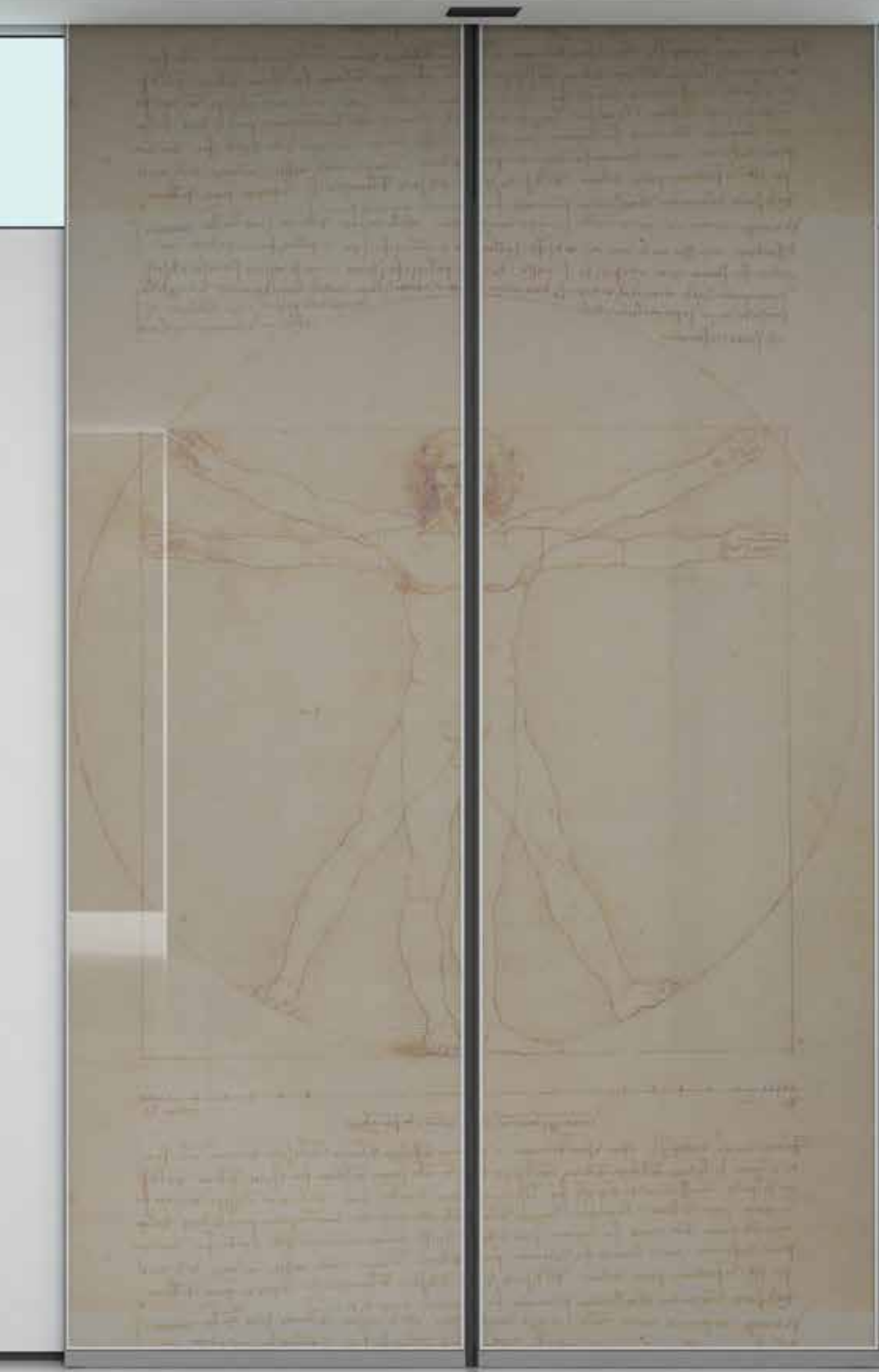


4 Logic OT Life OT

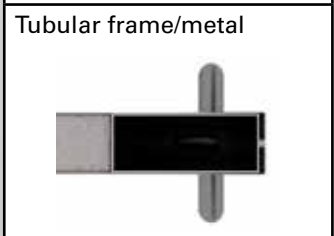
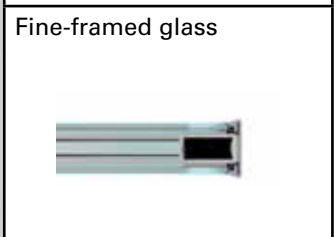
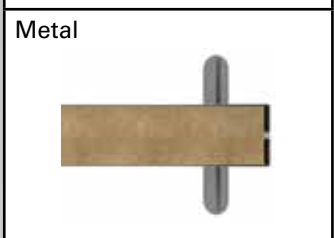


5 Hybrid wall





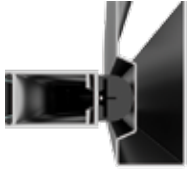
Door leaf design options:



Combination swing & sliding door

Frame design options:

Inset frame



Blind frame



Blind double-leaf frame

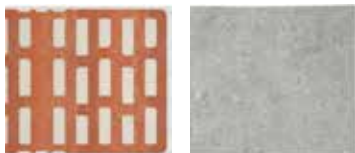


Steel frame



Wall design options:

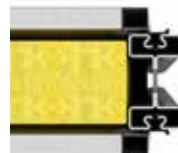
1 Solid wall



2 Lightweight partition wall



3 Logic Life

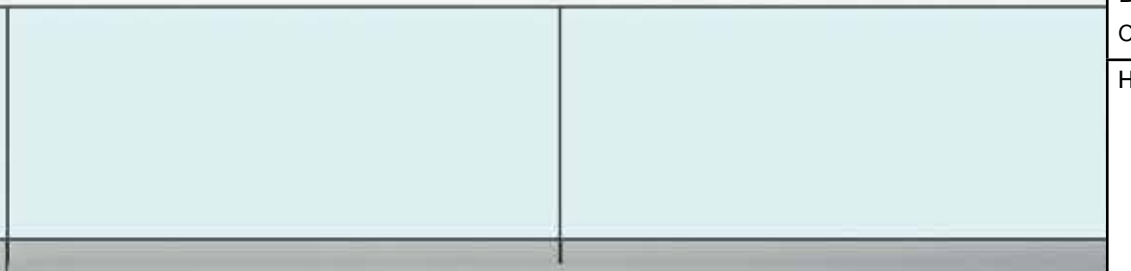


4 Logic OT Life OT



5 Hybrid wall





Door leaf design options:

HPL



Metal



Glass & aluminium frame



Fine-framed glass



Tubular frame/metal





Hamad Medical Hospital, Doha

Swing Doors

Lindner swing doors are suitable for a wide and diverse range of applications. Originally developed for use in GMP clean rooms, they also provide an excellent service in areas with top hygiene requirements and are designed specifically for these fields of application. The inbuilt flexibility allows construction of a radiation protection design for operating theatres or X-ray rooms without any visual changes.

The door unit can be designed as a total package with automatic drive, decontamination lock system control unit, magnetic clamp or other electric components. Whether for straightforward manual use, automated operation or as a complex system integrated in decontamination barrier system control units – the options are virtually unlimited. Customised solutions can be devised at any time to meet specific project requirements.

Benefits at a glance

- Meets hygiene requirements
- Numerous design options
- Radiation protection, laser shielding and sound insulation
- Option of integrating control and monitoring systems
- Use in decontamination lock systems

Surfaces

- Electrostatically applied powder coating:
Choice of RAL or NCS colours
- Coil coating
- Ground and brushed stainless steel
- HPL custom finish
- Option of glass with digital print



Glazing panel in metal/HPL door leaf

Glazing panel	- Rectangular - Round
Installation alternatives	- With screwed-on trim - Flush fitting without trim
Blackout facilities	- With inside electric Venetian blind - With inside manual Venetian blind - With inside electric roller blind
Special glazing requirements	- Radiation protection - Laser protection

Fittings	Door knob Handle
Frame	
Materials	Galvanised and powder-coated steel sheet Stainless steel
Controls	Buttons* Push-button cleats* Contact-free units* Customised solutions to specific requirements * For automatic doors only
Signals (optional)	Emergency off button (for decontamination lock function) Red/green lights (for decontamination lock function)
Special functions (optional)	Decontamination lock function
Safety measures	
Sensors (optional)	Control of door movements in accordance with DIN 18650
Resistance control	Electronic monitoring of resistance (dynamic force limitation) on opening and closing; door reverses as soon as the resistance prescribed in DIN 18650 prevents the movement of the door leaves

Single swing door

Frame design options:

Butt steel frame



35 dB

Rebated steel frame



35 dB

Double rebated flush steel frame



42 dB

Wall design options:

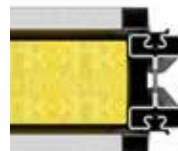
1 Solid wall



2 Lightweight partition wall



3 Logic Life



4 Logic OT Life OT



5 Hybrid wall



Door leaf design options:

HPL



Metal



Tubular frame/metal



Double swing door

Frame design options:

Butt steel frame



35 dB

Rebated steel frame



35 dB

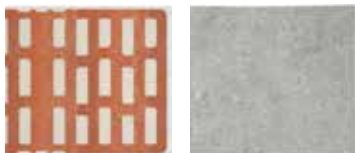
Double rebated flush steel frame



42 dB

Wall design options:

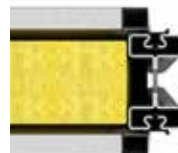
1 Solid wall



2 Lightweight partition wall



3 Logic Life



4 Logic OT Life OT

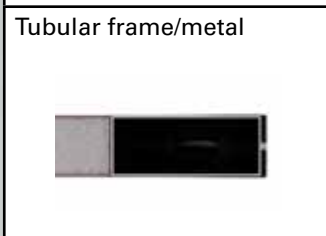


5 Hybrid wall





Door leaf design options:





Hamad Medical Hospital, Doha
Combined swing-sliding door

Lindner Ceiling and Lighting Systems

Versatile, available and visually appealing

Lindner will design, make and install your ceiling system according to your performance requirements, all standards and regulations relating to operating theatres are taken into account. You also have the choice of various types of ceiling panels and different modular dimensions. The systems offer flexibility in terms of the ceiling cavity and allow connection to low-turbulence displacement flow panels and integration of different lighting concepts. An operating theatre is also demanding in terms of the required light intensity and light fixture sealing. Lindner operating theatre lights are compatible with all operating theatre ceilings and our calculations ensure the best possible end results in terms of the lighting in your room. Naturally we can also comply with any requests for advanced LED technology in all colour ranges. LED lighting is state-of-the-art technology and is used in the recessed luminaires and in the downlights. The lights can also be used in MRT areas where there are extremely strong magnetic fields.



Benefits of our Ceiling Systems

- Fireproof ceilings for corridors which meet hygiene requirements
- Backlight panels combined with clip-in panel ceilings offer the potential for unique designs
- Production of special ceilings

Benefits of our Lighting Systems

- Compact panel-mounted light fixtures
- LED technology
- Various sizes
- A range of wattages with optimum efficiency
- Electrical plug-in connections

Operating Theatre Ceiling Clip

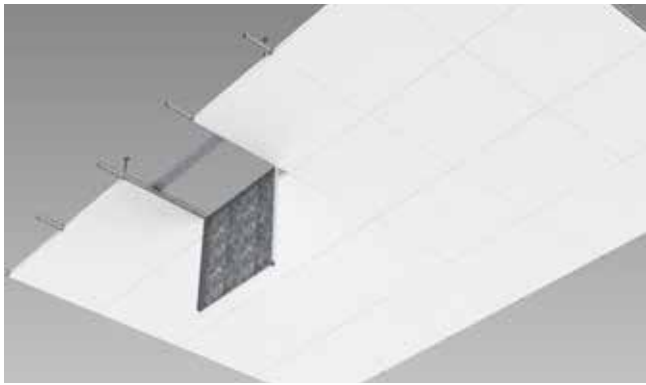


Dortmund Hospital
Photo: © Objektfotografie Stüber

The Clip metal ceiling system is made up of a galvanised substructure consisting of suspension channels and clip-in profiles. The individual sections can be supplied with or without bevelled edges and in clip-in design or clip-in/swing-down design. The system can be combined with many standard fittings which are commercially available, such as light fixtures, air vents and low-turbulence displacement flow panels.

Benefits at a glance

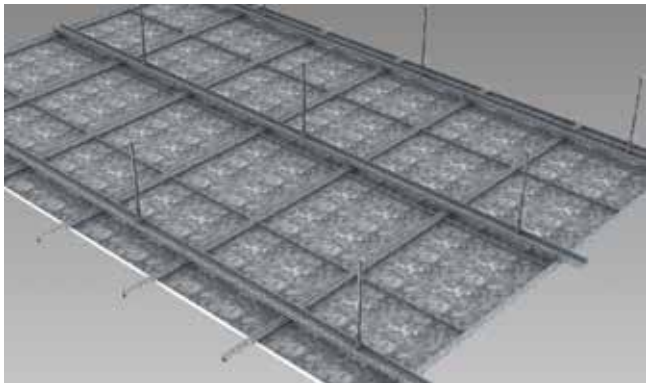
- Ceiling panels easily removable for inspection
- Sealable ceiling joints sealable to satisfy hygiene requirements
- Easy to clean and disinfect
- Flush-fitting system
- Lightweight
- Straightforward integration of low-turbulence displacement flow panels, operating theatre downlight or strip light fixtures



Clip ceiling system seen from below. Visible side with or without bevelled edge.

Technical data

Standard grid dimensions	600 x 600 mm 625 x 625 mm
Rectangular panels	1,200 x 600 mm 1,250 x 625 mm
Special modular dimensions	On request
Minimum system height	80 mm
System weight	Approx. 10 kg/m ²
Fire protection class	F0
Max. ambient pressure levels	± 150 Pa



View of ceiling system from above. The visible joints on the room side can be sealed to meet cleanroom standards.

Surface finishes and materials

- Electrostatically applied powder coating:
Choice of RAL or NCS colours
- Ground and brushed stainless steel



Clip ceiling system with circumferential strip lights and connection to low-turbulence displacement flow panel.



Backlight Panels



Lindner Reinraumtechnik features unique LED lighting solutions with a wealth of design options. Digital photographic prints can be chosen at will, enabling virtually any conceivable ambience and creating a sense of harmony in the room.

Benefits at a glance

- Meets hygiene requirements
- Possibilities for individual design
- Cutting-edge LED technology





University Medical Center Hamburg-Eppendorf

Fireproof Ceilings for areas with hygiene requirements

The fireproof ceilings with F30 fire rating are tested for conformity with DIN 4102-2 and come with a general approval certificate issued by the building inspection authorities. The various designs can be supplied with "F30-A" or "F30-AB" classification. The fireproof ceilings are tried and tested systems. They are particularly user-friendly systems which are perfected down to the last detail. Customised solutions can be supplied to meet specific requirements in any given project.

Benefits at a glance

- Tested for hygienic suitability
- Easy to clean and disinfect
- Non-hazardous to health
- Choice of colours, surface finishes and perforations
- Slimline panels (65 mm)
- Slim connection profiles
- Integration of Lindner LED lighting solutions
- No tools required for opening and closing (detachable and movable)
- Special project-specific solutions are possible



LMD-F30-A/AB Type 8 – user-friendly fireproof ceiling carefully engineered in every detail – and tested for hygienic suitability!



LMD F30-A/AB Type 10 Drop-Slide function – no dangling ceiling panels likely to cause disruption to passers-by during inspection works in the cavity.





KRH Hospital, Nordstadt

Operating Theatre Lighting Systems

The recessed luminaires and downlights developed specially for operating theatres and clean rooms combine housing fixtures of the correct standard to meet hygiene requirements with state-of-the-art LED lighting technology. Choose from a variety of shapes, including square or round, or strips around the low-turbulence displacement flow panel. The operating theatre lights are extremely versatile in terms of extra options and add-on technical systems.

LED benefits at a glance

- Up to 50 % less energy consumption than conventional lighting
- Very long service life of over 50,000 hours and requiring virtually no maintenance
- Unobstructed availability of lighting in the operating theatre
- Less heat build-up and therefore less cooling required
- Environmentally-friendly manufacture and disposal
- Extremely low installation heights



RP LED – integrated downlight Ø 190 mm



LP LED – integrated light without frame and with optional black edging



CP LED – integrated light with frame

Technical data

Voltage	230 v/50 Hz
Protection class	I
Protection rating	IP 65
Means of enclosure	- Toughened safety glass, patterned or plain - Laminated safety glass optional (shatterproof)
Operation/maintenance	On the room side
Housing colour	RAL 9016 or as specified
Light colour (standard)	Neutral white \approx 840 Selective RGB colour spectrum optional
Colour temperature (standard)	4,000 K
Dimensions (L x W x H)	- 1,200 x 300 x 55 mm for strip light installation - 600 x 600 x 55 mm - 625 x 625 x 55 mm - Further dimensions on request
Wattage	- Project-specific LED design - Conventional lighting system

Optional extras

- Emergency lamp and dimmer function
- Choice of different colours in RGB spectrum
- LED-H surface light
- DALI standard
- Top-mounted controls
- MRT room capability





Lindner Operating Theatre Ventilation Systems

We fit all the areas of the operating theatre with the necessary ventilation system components, from low-turbulence displacement flow panels and adjustable ceiling vents for incoming and outgoing air, right through to software-controlled filter fan units and laminar airflow grates for the wall installation. As general contractors, we take charge of the entire process of planning and installing the ventilation and air conditioning system.

Whatever your requirements:

- Different materials and sizes
- CFD simulation for flow optimisation
- Measurements of particles and microbes during inspection and acceptance procedure
- Customised solutions for all fields of application



KRH Klinikum Nordstadt (KRH Hospital, Nordstadt)

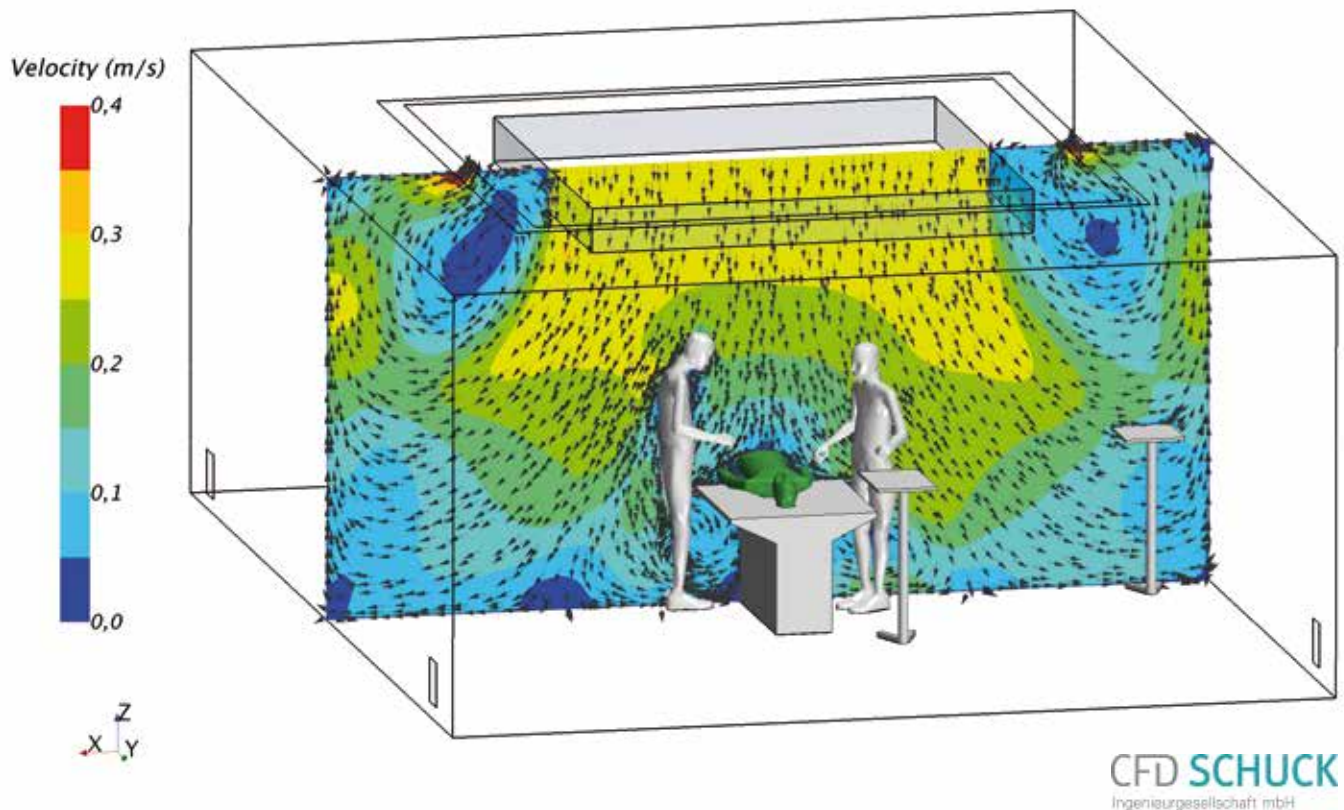
Low-Turbulence Displacement Flow Systems



In cooperation with strong business partners, state-of-the-art low-turbulence displacement flow systems are designed and installed to your specifications. All the national norms and international standards relating to new ventilation and air conditioning systems are duly observed in any given project. Decades of experience in air conditioning technology provide a guarantee of a safe and reliable supply of clean air for your surgical areas – all over the world.

Benefits of Low-Turbulence Displacement Flow Systems at a glance:

- Suitable for integration in Lindner operating theatre ceiling systems to hygiene-compliant standards
- Low-turbulence air circulation unit with variable frame system
- Low sound pressure level
- Low-turbulence displacement flow panel and CFD flow optimisation simulation from one source



CFD Simulation

Fluid dynamics are used, if necessary, to simulate flow in an operating theatre. The calculations take air movements into account, such as inward and outward flows of air, cross flows, or possible sources of heat (machines, people, wall heating). It is possible in this way to identify areas which have insufficient ventilation or which are subject to dangerous vortices and transverse flows before starting the construction. The simulation guarantees a better design and finish of operating theatres. It also allows improvements to be made to the heating and ventilation systems or to other installations before embarking on the work.

Benefits of CFD simulation at a glance

- Detailed depiction of flows and particles, with analyses based on both time and place
- Evaluation of different layouts (positions of personnel, operating table and other furniture)
- Prediction of particle movements and deposition
- Design confirmed by DIN 1946-4 standard on ventilation and air conditioning in medical applications

Exhaust Air Chute with inspection opening



KRH Hospital, Nordstadt

The exhaust air chute consists of a built-in cabinet flush with the wall and an inspection hatch. It can be fitted with one or two fibresept lint trap filters as optional extras. These trap filters are fitted flush with two side pivots for tool-free installation and removal. The inspection hatch has integrated hinges for ease of opening and closing. The exhaust air chute is specially designed for operating theatres in conformity with VDI 2167 and DIN 1946.

Benefits at a glance

- Ventilation and filter system, easy to maintain
- Choice of RAL or NCS colours
- Flush-fitting system
- Easy opening and closing action



Exhaust air chute with inspection opening in combination with fibresept ventilation grille

Technical data

	Hook-on Logic-OT/Life-OT partition systems	Free-standing All partition systems
Max. exterior width	1,190 mm	1,210 mm
Max. interior width	1,120 mm	1,200 mm
Min./max. depth	120/450 mm	120/480 mm
Max. cross section	0.20 m ²	0.23 m ²
Height max.	5.8 m	5.8 m
Max. air flow	6,000 m ³ /h	6,000 m ³ /h

Surface finishes and materials

- Electrostatically applied powder coating
- Ground and brushed stainless steel



Exhaust air chute open to allow straightforward cleaning



Dortmund Hospital
Photo: © Objektografie Stüber





Hamad Medical Hospital, Doha

Operating Theatre Ventilation Grille

The operating theatre ventilation grilles can be integrated both in exhaust air units and in cross flow units between two rooms and flush-fitted on both sides of swing doors and sliding doors. The stainless steel structure is built specifically for operating theatres in accordance with VDI 2167 and DIN 1946, and in line with hygiene standards under DIN 6812, and can be removed without tools. Powder coating is available as an optional finish.

Benefits at a glance

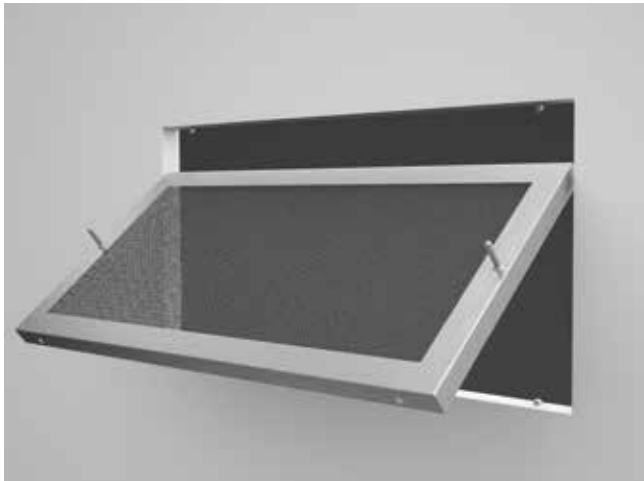
- Meets hygiene requirements
- Choice of RAL or NCS colours
- No tools required for disassembly and servicing
- Possible integration in door systems
- Various possible areas of application

Surface finishes and materials

- Electrostatically applied powder coating
- Ground and brushed stainless steel

Technical data

	antisept	fibresept	radiasorb
Max. surface area	1.0 m ²	0.5 m ²	1.2 m ²
Max. air flow	11,500 m ³ /h	4,500 m ³ /h	4,100 m ³ /h
Free section	Up to 80 %	Approx. 40 %	25 %
Lead equivalent	---	---	Up to 2.0 mm



Ventilation grille fibresept



Ventilation grille radiasorb with powder-coated finish; an optional lint filter can be fitted at the back.



Surfaces

Powder coating

Electrostatically charged polyester-based powder particles are blasted onto an earthed substrate and then cross-linked by heating. The surface is smooth, extremely hard-wearing and resistant to a large number of cleaning agents and disinfectants. The powder coating does not contain any materials which evaporate or emit particles. Choice of any RAL¹⁾ or NCS²⁾ colour. The test report LI 1004-521-1/2 issued by the Fraunhofer Institute for Manufacturing Engineering and Automation relating to our surfaces includes the following tests:

- Chemical resistance on steel sheet with powder coating and steel sheet with coil coating
- Microbe reduction of surfaces on steel sheet with powder coating, steel sheet with coil coating, brushed stainless steel and ground stainless steel
- Microbial metabolic potential on steel sheet with powder coating and steel sheet with coil coating

High-pressure laminates (HPL)

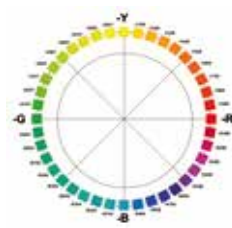
HPL is a composite material made of paper and resin. It is extremely impact-resistant and resistant to a large number of cleaning agents and disinfectants. The exceedingly tough composite can be supplied in many different colours and has stood the test of time over decades in areas subject to strict hygiene controls.

Stainless steel

Stainless steel is excellent in terms of its ability to satisfy hygiene requirements and its supreme levels of resistance to aggressive, liquid or gaseous substances. It may be ground and brushed or alternatively powder-coated.

Glass

The smooth finish of glass makes it very easy to clean. Glass is resistant to most cleaning and disinfectant agents and offers many design and lighting possibilities.



Option of all RAL¹⁾ and NCS²⁾ colours

1) RAL Deutsches Institut für Gütesicherung und Kennzeichnung e.V.
(German Institute for Quality Assurance and Certification)

2) NCS Natural Colour System

Joins

Sealing wall and ceiling joints in sterile zones, especially in operating theatres, is crucial for patient safety because of possible exposure to germs and bacteria.

In contrast to ceiling joints, which are mostly sealed with clean room silicone, sealing vertical and horizontal wall joints usually poses the question whether to use "wet or dry sealant". Naturally there are advantages and disadvantages associated with both types of jointing. An excerpt from guidelines published by the Robert Koch Institute on this subject says "[...] compression seals frequently only feign a perfect transition of building elements. It is important to ensure a perfect sealing of transitions of building materials in terms of hygiene."

Dry sealing

In practice it can make sense to use a cap seal or beading method to seal a joint, depending on the field of application. From a hygiene point of view, however, this only applies in areas not subject to frequent cleaning and disinfection as the moisture this generates can seep into the joints by capillary action despite the sealing.

One major advantage of dry seals, on the other hand, is that they can be replaced quickly and simply, and therefore economically. This saves time when inspection work needs to be done in the wall cavity and keeps down the cost of such work.

Wet sealing

Wet seals with clean room silicone are especially suitable for high-risk areas, such as operating theatres, from the point of view of hygiene – and therefore also for reasons of patient safety. This method of sealing has major advantages when it comes to cleaning and disinfection because moisture cannot penetrate the joints.





Großhadern Hospital

Lindner General Contracting

You have the vision – Lindner has the perfect package to make it a reality and can advise you on construction, function, technology and design. From public spaces, cafeterias, hospital rooms and operating theatres right through to the facade, we can give your hospital a 'facelift', planning the work and acting as your general contractor. Interfaces will be optimised and minimised in the process because we will have everything covered.

Benefits at a glance

- Completion of all areas including hybrid operating rooms
- Ventilation and air conditioning technology
- Technical building equipment
- Instrumentation and control equipment
- Electrics and network engineering
- Sanitary facilities
- Peripheral audio and video equipment
- Customised solutions

We provide a one-stop shop for individual services or integrated all-in-one solutions, meeting the precise requirements relating to your project.

And then? Your long-term satisfaction with your building is important to us, therefore our expert servicing and maintenance team will still be at your service after handing the keys over to you.



Siloah Hospital, Hanover



KRH Hospital, Nordstadt

Patient Rooms of the Future



Our health system is in a state of flux. Hospitals which were once devoted purely to medical care are evolving into health centres with a degree of emphasis on the comfort factor. Practical concerns and hygiene issues used to be the only criteria taken into account when building premises but nowadays additional aspects are coming into play, such as comfort, enjoyment and well-being. The aim is to provide a pleasant atmosphere for patients, visitors and nursing staff similar to that typically found in a hotel.

With the right lighting and carefully designed furnishing, hospital rooms can be transformed into multi-purpose rooms which enable patients to relax and amuse themselves, but also to receive the best possible treatment and to recover as quickly as possible.

The Lindner Reinraumtechnik develops special solutions to individual project specifications, featuring new interior designs, air conditioning systems, colour schemes, audio systems and lighting designs for the patient room of the future.



Reference Projects



Berlin Military Hospital
Berlin, Germany
2007 - 2009



Dortmund Hospital
Dortmund, Germany
2009 - 2013



Großhadern Hospital
Munich, Germany
2011 - 2014



Großhadern Hospital (LMU)
Munich, Germany
2012 - 2014



Siloah Hospital, Hanover
Hanover, Germany
2011 - 2015



Hamad Medical Hospital
Doha, Katar
2013 - 2016

Reference projects



**Paracelsus Hospital,
Henstedt-Ulzburg**
Henstedt-Ulzburg, Germany
2010



Park-Klinik Manhagen Hospital
Großhansdorf, Germany
2009 - 2010



Sana Kliniken Düsseldorf Hospital
Düsseldorf, Germany
2011 - 2012

We can do it all for you.

Lindner Concepts:

- Airports and Railways
- Clean Rooms and Operating Theatres
- Cruise Liner and Ship Fit-out
- General Contracting
- Hotels and Resorts
- Insulation and Industrial Service
- Interior Fit-out and Furnishings
- Special-Purpose Constructions and Stadiums
- Studios and Concert Halls
- System Buildings

Lindner Products:

- Ceiling Systems
- Doors
- Dry Lining Systems
- Facades
- Floor Systems
- Heating and Cooling Technologies
- Lights and Lighting Systems
- Partition Systems
- Roofing Systems
- Steel & Glass

Lindner Service:

- Clearance of Harmful Substances
- Construction Management and Project Development
- Deconstruction and Interior Demolition
- General Planning
- Global Product Supplies
- Green Building
- Industrial Scaffolding
- Installation and Building Services
- Research and Development

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