FLOORS

WALK AS YOU WISH!

Lindner

ADD.VANTAGE RETHINKING SPACES

Over the years, Lindner Group has developed into a technologically leading, solution-oriented and reliable partner with a solid economic basis. Our comprehensive range of products and services for the building envelope, interior fit-out and insulation fits almost any field of application. True to the motto "Rethinking Spaces", we develop tailor-made and yet versatile solutions and concepts for your construction project. Being a completely family-owned business, we particularly care about our environment. With new concepts such as Cradle to Cradle®, low-emission products and well-considered spatial concepts, we create Add.Vantage for the people and their environment. As a service provider and an employer, we put the people in focus. The customer is bound to notice this, too: We enjoy our work, are convinced of what we do and proud about what we are capable of.

STABILITY AND GROWTH

Since the founding of the company by Hans Lindner in 1965, our headquarters has been located in Lower Bavarian Arnstorf, where we have grown enormously during the last decades. We are proud to be the largest employer in the district of Rottal-Inn with a global workforce of around 7,500 employees. Every day we work on 2,500 projects which revolve for the most part around our core business, the construction industry. It is complemented by our charitable Hans Lindner Foundation, the mk | hotels, the in-house breweries and more recently a sustainable organic agriculture and forestry business.

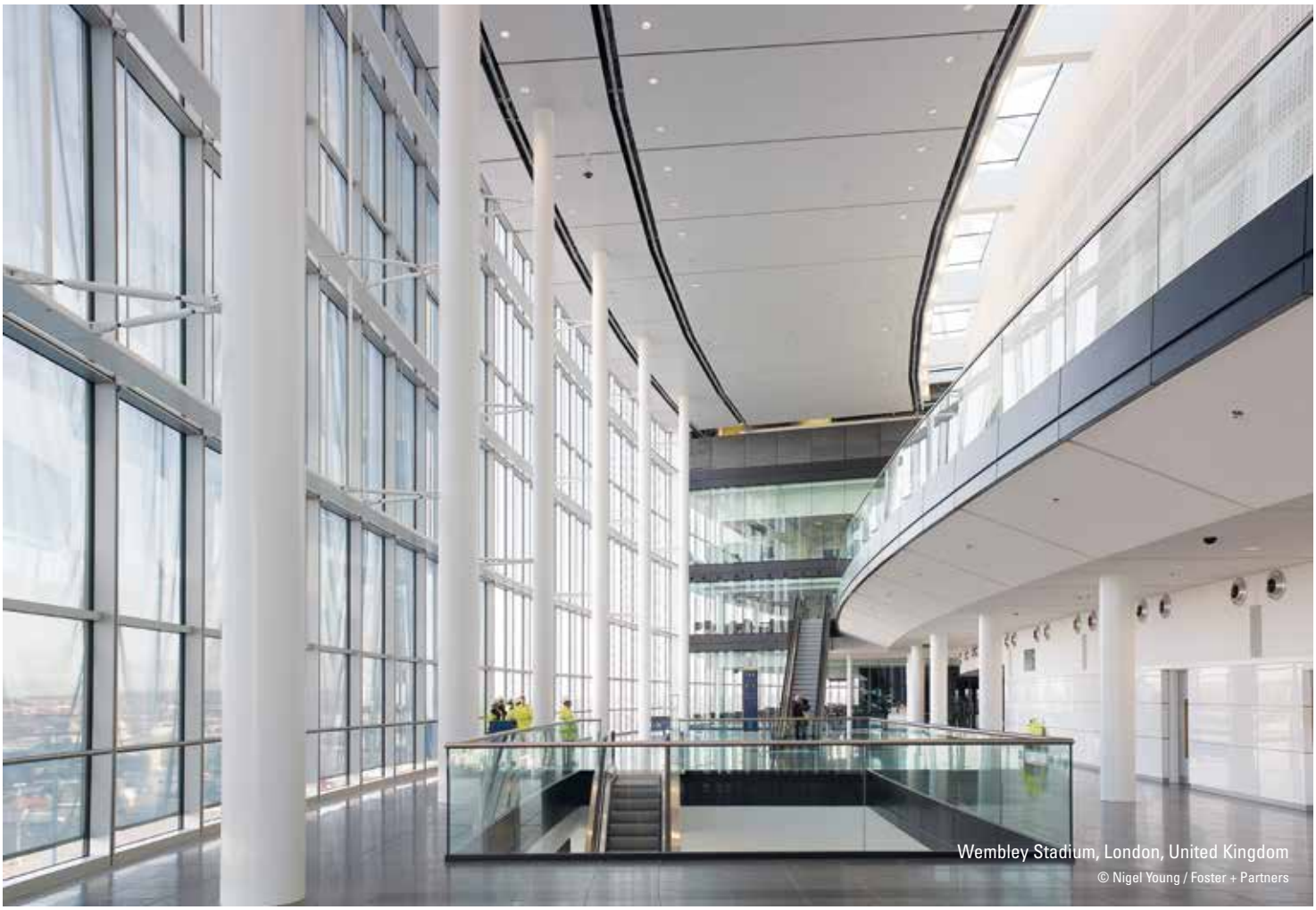
FLOORS
WALK AS YOU WISH!

Floor systems have a long tradition at Lindner. Being an international market leader, we supply the most extensive range. Our gypsum panels are made almost entirely from recycled materials and are the world's first calcium sulphate panels to have a FSC® and Cradle to Cradle Certified® certificate. Finished into NORTEC panels, they can be used in a wide range of applications as raised floor and as FLOOR and more® in hollow floor systems.

An attractive alternative could be our cost-effective and low-emission chipboard panels LIGNA. These especially light floor panels can likewise be supplied with an FSC® certificate on request. Our skills set includes efficient solutions for data centres and clean rooms, where for instance our aluminium floor panels can be used. The infinitely variable height adjustment of our highly loadable pedestals compensates for any unevenness of the subfloor. We fully manufacture the substructure for all our floor panels in our own production facilities in Lower Bavaria, which enables us to be constantly flexible in meeting your exact needs.

+ quick installation
+ direct access to the cavity at any location
+ convenient maintenance of data lines and building technology
+ verified environmental product declaration

Hahn+Kolb, Ludwigsburg, Germany



Wembley Stadium, London, United Kingdom

LONG-STANDING PRODUCT EXPERIENCE

LONG-STANDING PRODUCT EXPERIENCE

We started with production of our own ceiling and partition systems in our first Arnstorf joinery workshop in 1970. The production portfolio was extended in 1986 to include raised floors. Arnstorf is still the largest production site; virtually all products from the Lindner portfolio are produced here. Our headquarters is also home to numerous production-related competence centres, such as Purchasing, Logistics, Quality Assurance, Research and Development with its test workshop and, last but not least, the technical training centre for all industrial vocations. Over 200 employees at our site in Dettelbach, Lower Franconia, have been producing gypsum panels since 1993. The production sites for floor systems by Lindner NORIT GmbH & Co. KG in Dettelbach and Lindner SE in Arnstorf as well as our parquet manufacture in Hliník Nad Hronom are FSC® certified.

OUR PRODUCTION SITES FOR FLOOR SYSTEMS

ARNSTORF – GERMANY
ceiling, floor and partition systems, luminaires, facades and clean rooms are produced here as well as high-quality carpentry for fitting out interiors of buildings and ships
64,250 m² production area
200,000 m² company site

DETTELBACH – GERMANY
production of gypsum and cement fibre panels and dry lining products
25,000 m² production area
90,000 m² company site

HLINÍK NAD HRONOM – SLOVAKIA
production of parquet layers
1,200 m² production area
8,900 m² company site

A GLOBAL PLAYER... WITH ROOTS IN ARNSTORF

Globally we realise countless projects for our customers, meet challenges and grow with them. A worldwide network of reliable partners and established subsidiaries supports us in doing our work. In the following pages, you'll find an overview of our extensive range of floor solutions.

Contact us at our headquarters in Arnstorf or visit www.Lindner-Group.com to find your local point of contact.

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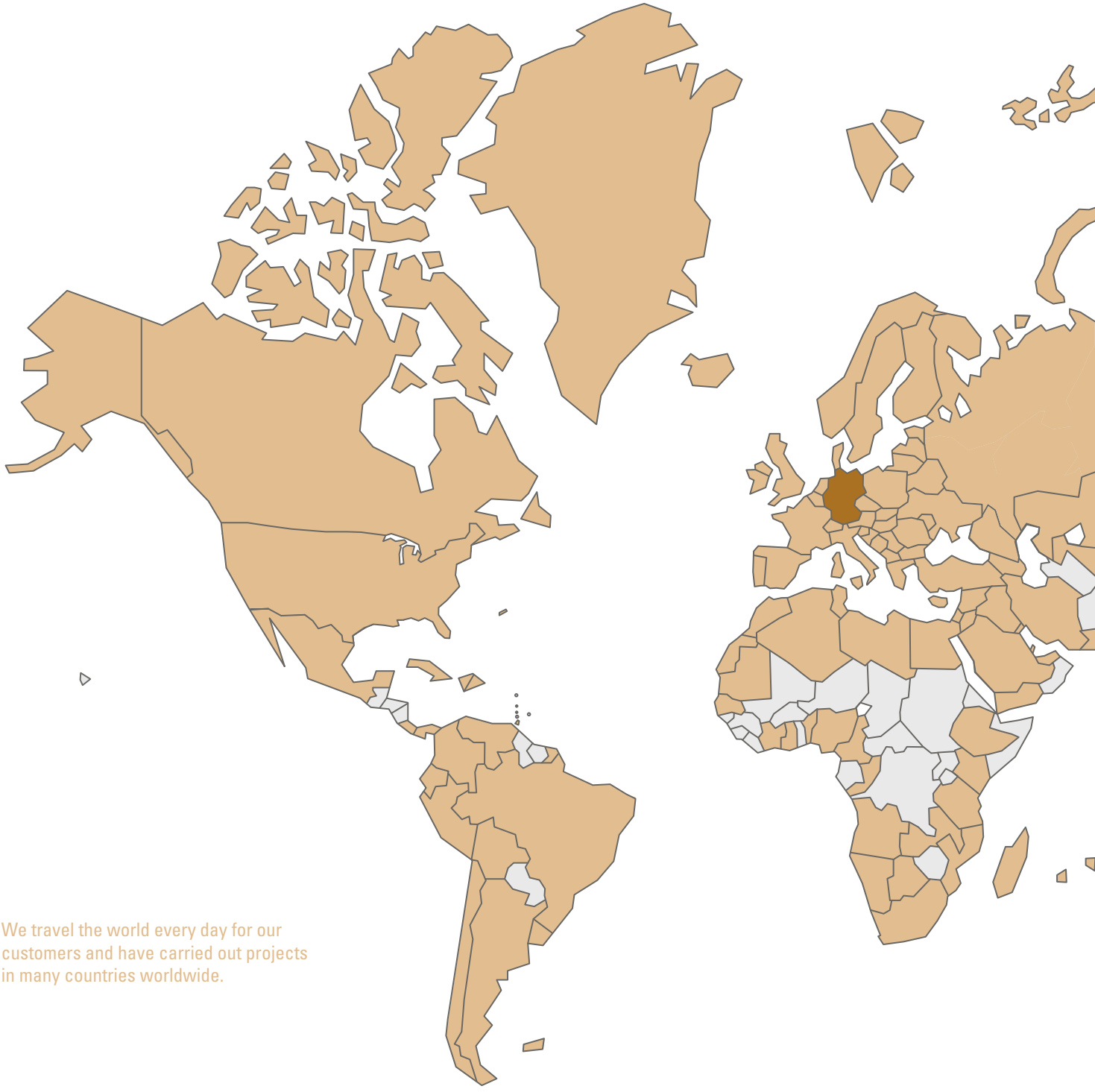


We travel the world every day for our customers and have carried out projects in many countries worldwide.

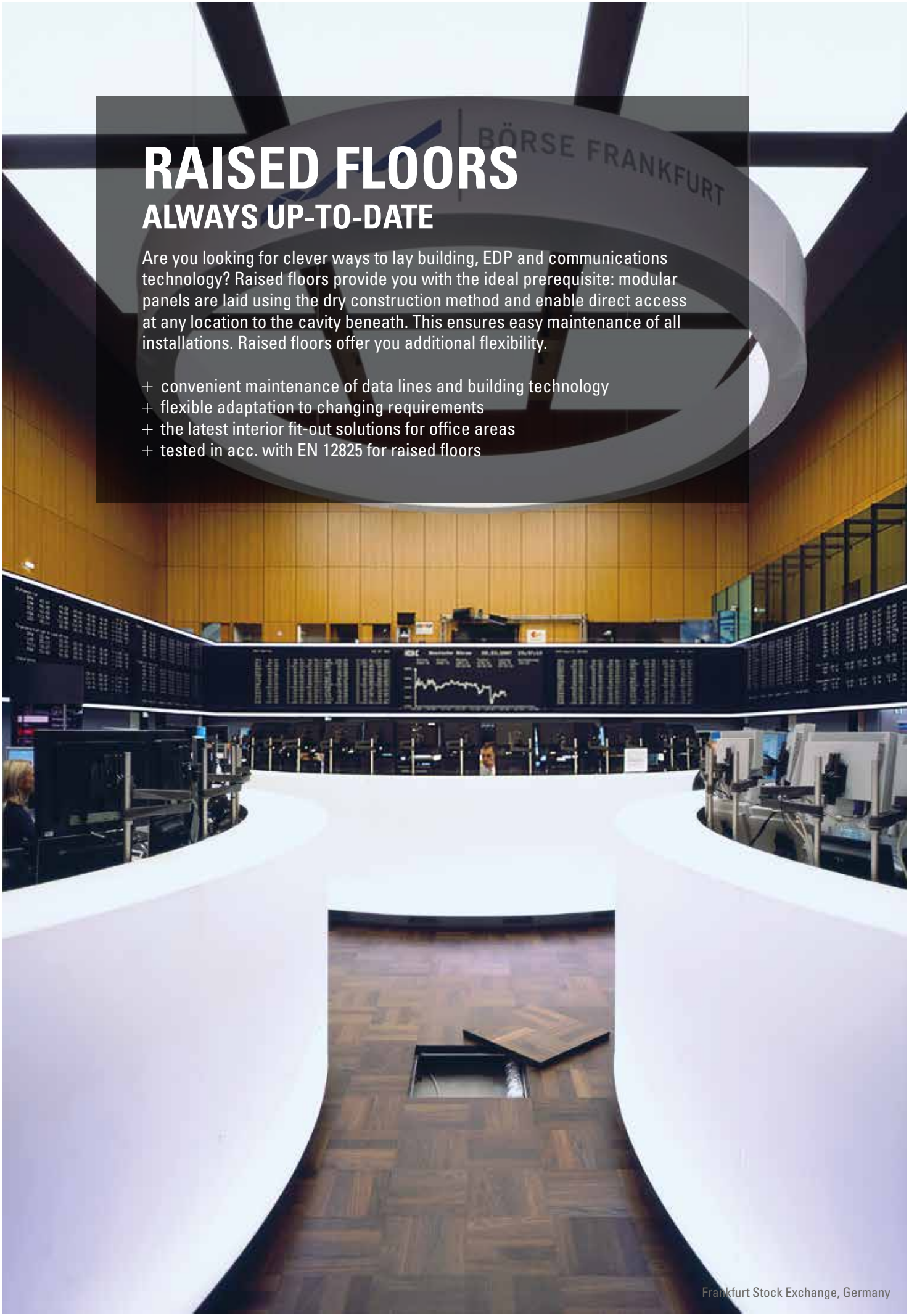
LINDNER FLOORS – REFERENCES WORLDWIDE

Aceros Arequipa, Pisco, Peru
AFI Vokovice, Prague, Czech Republic
Al Bahar Towers, Abu Dhabi, UAE
Ana Tower, Bucharest, Romania
Atlas Capital Centre, Cetinjski Put Podgorica, Serbia
Audi Showroom, Marrakesh, Morocco
New Axel Springer Building, Berlin, Germany
Banco BPI, Maputo, Mozambique
Banco de España, Madrid, Spain
Blox, Copenhagen, Denmark
Business Garden, Vilnius, Lithuania
BMW Research and Innovation Centre, Munich, Germany
BMW Mexico City, Mexico
CFO Pharmaceutical Headquarters, Tirana, Albania
Cornerstone HQ, Lagos, Nigeria
DeLaMar Theatre, Amsterdam, Netherlands
ENI – Torre de Kanhangulo, Luanda, Angola
Erste Campus, Vienna, Austria
Evonik ME5, Singapore, Singapore
FIFA 2010 World Cup Stadium, Mbombela, South Africa
Algiers Airport, Algeria
FOS Studio, Panama City, Panama
Fraport, Frankfurt, Germany
GIS Building, Chonburi, Thailand
Generali Tower, Milan, Italy
Grande Mosque Algiers, Algeria
Hira I and II, Wonju, South Korea
HUAWAI, Shenzhen, China
Hypercube Skolkovo, Moscow, Russia
I&M Bank HQ in Nairobi, Kenya
Infineon Data Centre, Batam, Indonesia
Kaupunkiympäristötalo, Helsinki, Finland
Luxotica Building, Athens, Greece
Maison du Livre, Luxembourg (City), Luxembourg
Methanol Plant, Point Lisas, Trinidad and Tobago
Metropol Palace, Belgrade, Serbia
MimoVreste, Ljubljana, Slovenia
MobiFone, Ho Chi Minh City, Vietnam
NCC Head Office, Stockholm, Sweden
The "Neue Börse" in Zurich, Switzerland
Nishith Desai Associates (NDA), Alibag, India
OBM Meridien, Istanbul, Turkey
Oporto Office Park, Porto, Portugal
Oslo Airport, Oslo, Norway
Punta Catalina Power Central, Punta Catalina, Dom. Republic
Qipco Office Tower – The Tornado, Doha, Qatar
Quadrum Business City, Vilnius, Lithuania
Radio Televizija Republike Srpske, Banja Luka, Bosnia and Herzegovina
Roads and Maritime Services at Sydney Harbour Bridge, Australia
Roche, Indianapolis, USA
10 Rue Grenelle, Paris, France
Saudi Electricity Co. Headquarters, Riyadh, Saudi Arabia
Serdika Centre, Sofia, Bulgaria
Sky Office Tower, Zagreb, Croatia
Stelios Joannou Centre, Nicosia, Cyprus
TDB Bank Mongolia, Ulan Bator, Mongolia
The Capital – AXA, Brussels, Belgium
VLTI Lab in the Paranal Observatory, Atacama Desert, Chile
Wembley Stadium, London, United Kingdom
X-FAB Sarawak Building, Kuching, Malaysia
YBL Palace, Budapest, Hungary
Zebra Tower, Warsaw, Poland

RAISED FLOORS
ALWAYS UP-TO-DATE

Are you looking for clever ways to lay building, EDP and communications technology? Raised floors provide you with the ideal prerequisite: modular panels are laid using the dry construction method and enable direct access at any location to the cavity beneath. This ensures easy maintenance of all installations. Raised floors offer you additional flexibility.

+ convenient maintenance of data lines and building technology
+ flexible adaptation to changing requirements
+ the latest interior fit-out solutions for office areas
+ tested in acc. with EN 12825 for raised floors



Frankfurt Stock Exchange, Germany

Hüttinger Freiburg, Germany

RAISED FLOORS

	TECHNICAL DATA	ACOUSTICS	FIRE PROTECTION	
		Building and Room Acoustics *in acc. with ISO 10848 **in acc. with ISO 140140 ***in acc. with ISO 354	**Reaction to Fire Performance** *in acc. with DIN 4102-1 and EN 13501-1 **to EN 13501-1	**Fire Resistance Performance** *in acc. with DIN 4102-2 **in acc. with EN 13501-2
FIBRE-REINFORCED CALCIUM SULPHATE PANELS				
NORTEC ↘ from page 16 raised floor for standard requirements	panel thickness: 16 - 38.5 mm system weight: 32 - 62 kg/m²	$D_{n,f,w}$: 47 - 64 dB* R_w: 61 dB** ΔL_w: 11 - 36 dB** $L_{n,f,w}$: 73 - 38 dB*	non-combustible*	F 30 and F 60*, REI 30 and REI 60**
NORTEC power ↘ from page 18 raised floor for heavy-duty areas	panel thickness: 30.5 - 44.5 mm system weight: 56 - 81 kg/m²	–	non-combustible*	REI 30**
NORTEC acoustic ↘ from page 20 raised floor for acoustical adjustment	panel thickness: 38 - 68 mm system weight: 70 - 75 kg/m²	α_w: 0.15 - 0.85*** class: B - E	non-combustible*	–
NORTEC sonic ↘ from page 22 raised floor for seepage ventilation	panel thickness: 38 mm system weight: 57 kg/m²	–	non-combustible*	–
NORTEC comfort ↘ from page 24 raised floor with heating and cooling	panel thickness: 44 mm system weight: 66 kg/m²	–	non-combustible*	REI 30**
HIGH-DENSITY CHIPBOARD PANELS				
LIGNA ↘ from page 28 raised floor for standard requirements	panel thickness: 28.5 - 38.5 mm system weight: 25 - 33 kg/m²	$D_{n,f,w}$: 45 - 59 dB* R_w: 62 dB** ΔL_w: 16 - 33 dB** $L_{n,f,w}$: 69 - 30 dB*	difficult to ignite	F 30*, REI 30**
LIGNA power ↘ from page 30 raised floor for heavy-duty areas	panel thickness: 38.5 mm system weight: 38 - 42 kg/m²	–	difficult to ignite	F 30*
ALUMINIUM DIECAST PANELS				
PRODATA ↘ from page 34 raised floor for heavy-duty areas	panel thickness: 50 - 60 mm system weight: 27 - 42 kg/m²	–	non-combustible*	–
ALUVENT ↘ from page 36 raised floor for heavy-duty areas with ventilation	panel thickness: 50 - 60 mm system weight: 27 - 42 kg/m²	–	non-combustible*	–
OCTOGRATE ↘ from page 38 raised floor for heavy-duty areas with ventilation, powder-coated	panel thickness: 62 mm system weight: 31 kg/m²	–	non-combustible*	–
STEEL VENTILATION PANELS				
VENTEC ↘ from page 42 raised floor as a tubular frame construction with ventilation, powder-coated	panel thickness: 30 - 50 mm system weight: 40 - 60 kg/m²	–	non-combustible*	–
GLASS RAISED FLOOR PANELS				
LUMEN ↘ from page 46 raised floor with transparent glass panels	panel thickness: 38 mm system weight: 89 kg/m²	–	non-combustible*	–

CLIMATE REGULATION		SUSTAINABILITY					SERVICE		STATICS
Heating and Cooling *in acc. with EN 1264 **in acc. with DIN EN 1026	**Ventilation** in acc. with DIN EN 1026	**Carbon-neutral**	**Cradle to Cradle Certified® Silver**	**verified EPD** in acc. with ISO 14025 | EN 15804	**FSC® certi-fied**	**IBR Test Seal**	**Leasing Option**	**Take-back/ Repurchase**	**Load and Deflection Class** in acc. with EN 12825
–	–	optional	✓	✓	✓	✓	✓	take-back guarantee	1A (2 kN) - 5A (5 kN)
–	–	–	✓	–	✓	✓	✓	take-back guarantee	6A (6 - 15 kN)
–	–	–	–	–	–	✓	✓	take-back guarantee	2A (3 kN)
–	free cross section: 4 - 24 %, air flow rate: 192 - 1,294 m³/h	optional	–	–	–	✓	✓	take-back guarantee	1A (2 kN) - 3A (4 kN)
heating performance: 84 - 95 W/m²* cooling performance: 25 - 36 W/m²*	–	–	–	–	✓	✓	✓	–	2A (3 kN) - 6A (6 kN)
–	–	CO_2 sink	–	✓	✓	–	–	–	1A (2 kN) - 5B (5 kN)
–	–	CO_2 sink	–	✓	✓	–	–	–	6A (6 - 7 kN)
–	–	–	–	–	–	–	✓	repurchase offer	6B (7 - 10 kN)
–	free cross section: 3.6 - 45.0 %	–	–	–	–	–	✓	repurchase offer	5B (5 kN) - 6B (7 - 10 kN)
–	free cross section: 53.3 %	–	–	–	–	–	✓	repurchase offer	6B (7 kN)
–	free cross section with round hole: 15 % / 24 % / 38 % free cross section with slotted hole: 16 % / 23 % air flow rate: 375 - 2,500 m³/h**	–	–	–	–	–	✓	–	2A (3 kN) - 5A (5 kN)
–	–	–	–	–	–	–	–	–	5A (5 kN)

FIBRE-REINFORCED CALCIUM SULPHATE PANELS

ENJOY ONGOING COMFORT

Many years of experience and continuous further development have resulted in our fibre-reinforced calcium sulphate panels setting standards in the most diverse application areas: they are pleasant to step on, have outstanding sound protection properties and can be combined with a wide variety of other floor systems, which makes these panels a widely applicable product.
We manufacture the panels in our own production facilities and pay particular attention to the high quality of our raw materials: our fibre-reinforced calcium sulphate panels are free of harmful emissions, which is why the Institut für Baubiologie Rosenheim GmbH (IBR, Institute for Biologically Sound Construction) recommends them as harmless in terms of building biology. Almost all our system panels made from gypsum are additionally FSC® certified due to our use of pre- and post-consumer waste paper. Thanks to the numerous advantages of our floor panels, there are virtually no limits to your imagination regarding the area of use and the choice of coverings.

+ excellent walking comfort
+ very high load-bearing capacity
+ non-combustible
+ harmless in terms of building biology

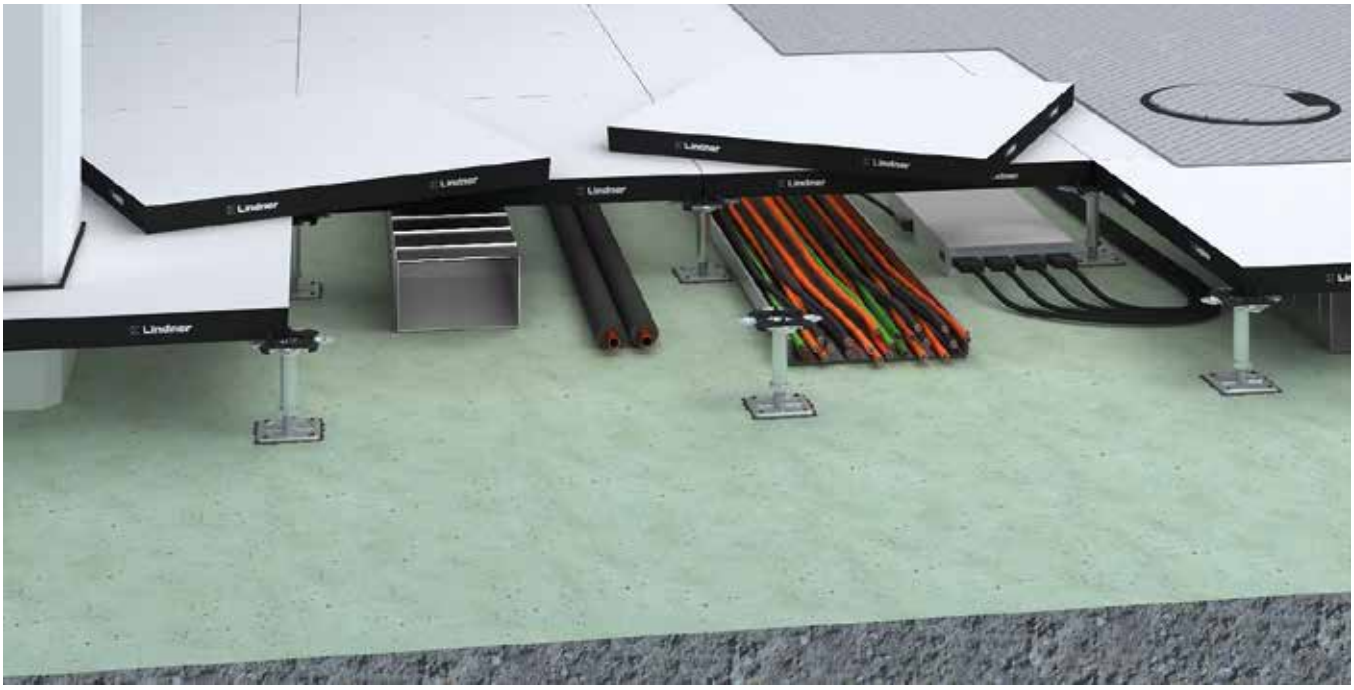
arabeska, Munich, Germany

NORTEC

RAISED FLOOR FOR HIGH DEMANDS

From pleasant walking comfort, outstanding sound insulation to high load-bearing capacity, the NORTEC Raised Floor System meets the demands in virtually all application areas. Our NORTEC floor panels are made from calcium sulphate and are classified as non-combustible. We have a direct influence on the selection of the raw materials for our products in our in-house production facility: the use of pre- and post-consumer waste paper means for instance that almost all NORTEC panels are FSC® certified. The Institut für Baubiologie Rosenheim GmbH (IBR, Institute for Biologically Sound Construction) also recommends NORTEC as harmless in terms of building biology.
Its convincing ecological and technical properties enable the system to be processed "from the cradle to the cradle". As the world's first system floor, NORTEC is Cradle to Cradle Certified® Silver. This flooring system can even be manufactured as carbon-neutral on request. The diverse combination options between NORTEC and other systems ensure a high degree of versatility. There are also virtually no limits regarding the choice of coverings.

+ easy lifting and exchanging of single panels
+ low air leakage rate



TECHNICAL DATA

Panel
fibre-reinforced calcium sulphate panel, optionally with galvanised steel sheet at bottom side, surrounding edge trim protection against damage and humidity on request

Panel Thickness
16 - 38.5 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
32 - 62 kg/m²

Standard Pedestal Heights
25 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^6\ \Omega$ (depending on covering)

NORTEC

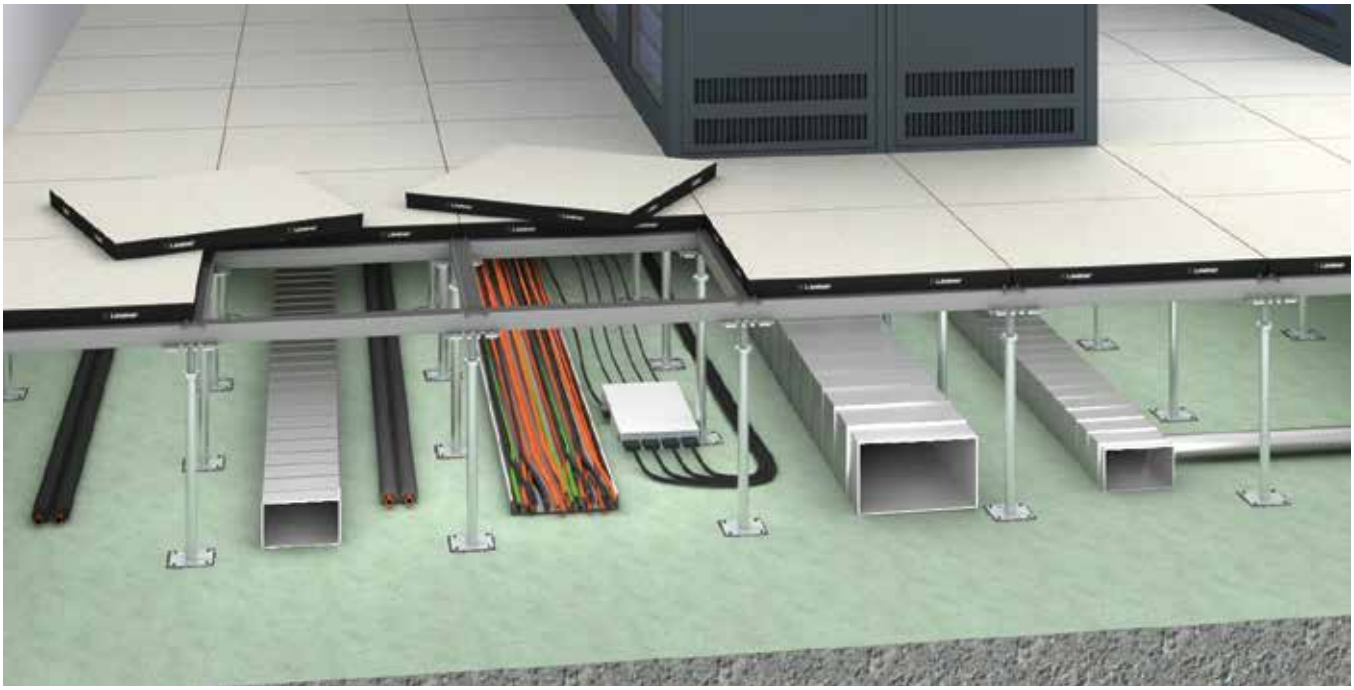
STATICS ↘ from page 112	**Load and Deflection Class** 1A (2 kN) - 5A (5 kN) in acc. with EN 12825 **Safety Factor** 2 **Tested Seismic Safety** possible in A - F in acc. with IBC (International Building Code)/AC 156
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1 **Fire Resistance Performance of the System** F 30, F 60 in acc. with DIN 4102-2 as per AbP, REI 30, REI 60 in acc. with EN 13501-2 as per classification report
ACOUSTICS ↘ from page 117	**Normalised Flanking Level Difference $D_{n,f,w}$** 47 - 64 dB **Rated Sound Reduction Index R_w** 61 dB **Reduction of Impact Sound Pressure Level ΔL_w** 11 - 36 dB **Normalised Flanking Impact Sound Pressure Level $L_{n,f,w}$** 73 - 38 dB
COVERINGS ↘ from page 94	textile coverings, elastic coverings, WOODline, STONEline, loose-laid tiles
APPLICATION AREAS	**Work:** common areas, stage and studio rooms, office buildings, rooms for radio and television production, technical rooms **Education:** libraries, research rooms, higher education institutions, schools **Health:** laboratories, clinics and hospitals **Recreation and Culture:** banks, shopping centres, museums, sales areas, places of assembly, stadiums **Transport:** train stations, airports, underground railways/tunnels **Industry:** power plants, laboratories and research, production facilities, clean rooms **Public Institutions:** court and government buildings **Public Areas:** entrance areas, necessary corridors
SUSTAINABILITY ↘ from page 126	Cradle to Cradle Certified® Silver, carbon-neutral possible on request, verified EPD in acc. with ISO 14025 and EN 15804, FSC® certified, IBR test seal
SERVICES ↘ from page 130	take-back guarantee, leasing option
ACCESSORIES ↘ from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, bridging profiles, reinforcement profiles

NORTEC power

RAISED FLOOR FOR HEAVY-DUTY AREAS

Our NORTEC power Raised Floor System takes on the bearing role for heavy tasks. There are many areas where floors need to withstand higher loads. This is the case for instance in data centres, production halls, museums and libraries. And here NORTEC power offers unsurpassed load capacity and takes up enormous loads. The raised floor has a very low weight per unit area.

+ low weight per square metre and very high load-bearing capacity at the same time
+ heavy equipment can be placed directly on the floor



TECHNICAL DATA

Panel
fibre-reinforced calcium sulphate panel, optionally with galvanised steel sheet at bottom side, surrounding edge trim protection against damage and humidity on request

Panel Thickness
30.5 - 44.5 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
56 - 81 kg/m²

Standard Pedestal Heights
45 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^6\ \Omega$

NORTEC power

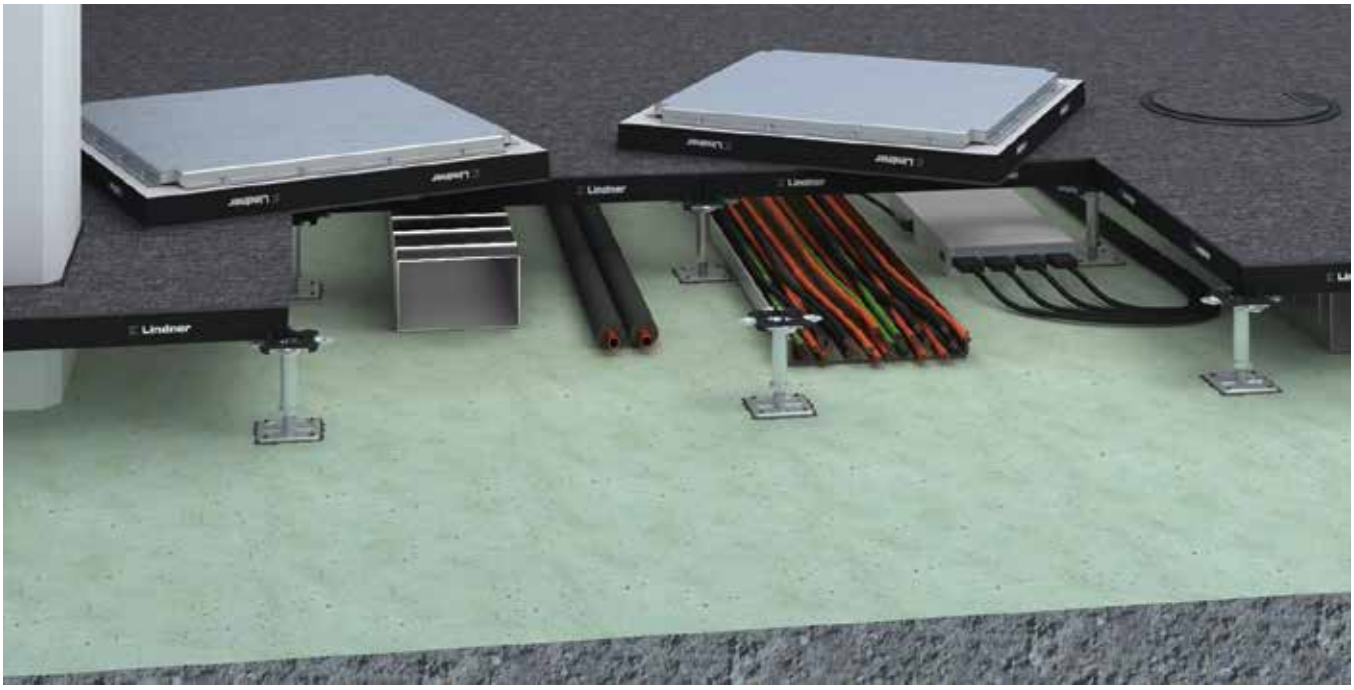
STATICS ↘from page 112	**Load and Deflection Class** 6A (6 - 15 kN) in acc. with EN 12825 **Safety Factor** 2 **Tested Seismic Safety** possible in A - F in acc. with IBC (International Building Code)/AC 156
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1 **Fire Resistance Performance of the System** F 30 in acc. with DIN 4102-2 as per AbP, REI 30 in acc. with EN 13501-2 as per classification report
ACOUSTICS ↘from page 117	**Normalised Flanking Level Difference $D_{n,f,w}$** 49 dB **Rated Sound Reduction Index R_w** 61 dB **Reduction of Impact Sound Pressure Level ΔL_w** 14 dB **Normalised Flanking Impact Sound Pressure Level $L_{n,f,w}$** 70 dB
COVERINGS ↘from page 94	textile coverings, elastic coverings, WOODline, STONEline, loose-laid tiles
APPLICATION AREAS	**Work:** stage and studio rooms, data centres, rooms for radio and television production, technical rooms, assembly rooms **Education:** libraries, research rooms, higher education institutions, schools **Recreation and Culture:** banks, shopping centres, museums, sales areas, places of assembly, stadiums **Health:** laboratories, clinics and hospitals **Industry:** power plants, production facilities, laboratories and research, clean rooms **Public Institutions:** court and government buildings **Transport:** train stations, airports, underground railways/tunnels **Public Areas:** entrance areas, necessary corridors
SUSTAINABILITY ↘from page 126	carbon-neutral possible on request, verified EPD in acc. with ISO 14025 and EN 15804, FSC® certified, IBR test seal
SERVICES ↘from page 130	take-back guarantee, leasing option
ACCESSORIES ↘from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, switchboard frames, bridging profiles, reinforcement profiles

NORTEC acoustic

RAISED FLOOR FOR ACOUSTICAL ADJUSTMENT

NORTEC acoustic makes an audible difference, because the perception of room acoustics largely depends on the reverberation time of the surroundings. Depending on the use of the room, this should be reduced or even regulated by a targeted choice of materials and the size of surface areas.
The NORTEC acoustic Raised Floor System is used for the acoustic optimisation of rooms. The perforated raised floor panels consist of fibre-reinforced calcium sulphate, a suitable covering and optional project-related cavity insulation. Acoustic fleece or acoustic elements contribute to optimising the sound absorption coefficient or to regulating the room acoustics. Especially at high and low frequencies, the system attains very good sound absorption values.

+ different variants of the acoustic panels can be combined with each other and with other floor systems
+ numerous options due to a selection of suitable coverings



TECHNICAL DATA

Panel
fibre-reinforced perforarted calcium sulphate panels with a suitable covering, optionally with galvanised steel sheet at bottom side, surrounding edge protection against impacts and humidity

Panel Thickness
38 - 68 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
70 - 75 kg/m²

Standard Pedestal Heights
25 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^6\ \Omega$

NORTEC acoustic

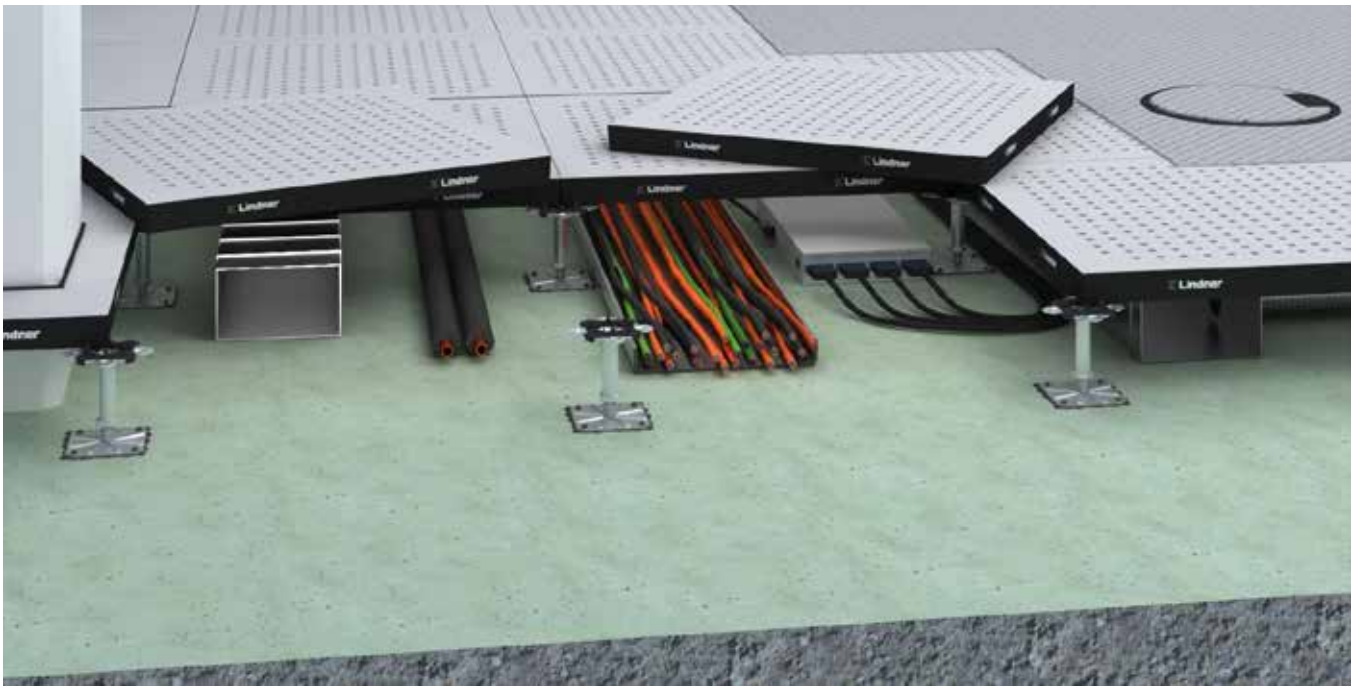
STATICS ↘from page 112	**Load and Deflection Class** 2 (3 kN) in acc. with EN 12825 **Safety Factor** 2 **Tested Seismic Safety** possible in A - F in acc. with IBC (International Building Code)/AC 156
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1
ACOUSTICS ↘from page 117	**Sound Absorption Coefficient** α_w 0.15 - 0.75 subject to covering **Sound Absorption Class** B - E
COVERINGS ↘from page 94	suitable, acoustically effective coverings
APPLICATION AREAS	**Work:** common areas, stage and studio rooms, office buildings, rooms for radio and television production, assembly rooms **Education:** libraries, higher education institutions, schools **Recreation and Culture:** banks, concert halls, museums, places of assembly **Public Institutions:** court and government buildings
SUSTAINABILITY ↘from page 126	IBR test seal
SERVICES ↘from page 130	take-back guarantee, leasing option
ACCESSORIES ↘from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, bridging profiles, reinforcement profiles

NORTEC sonic

RAISED FLOOR FOR SEEPAGE VENTILATION

Our NORTEC sonic Raised Floor System lets you breathe freely. The floor system supplies your rooms directly with fresh air via perforations in the raised floor panel. Perforated NORTEC panels ensure ideal air circulation. So virtually invisible room ventilation can be achieved when seepage ventilation coverings are used. Whether heating, cooling or ventilation – you can use this innovative floor system to create a particularly pleasant indoor climate and annoying draughts are now a thing of the past.

+ variable hole pattern
+ suitable for seepage ventilation coverings
+ up to 30 minutes fire resistance despite perforation
+ visible and invisible perforations are possible



TECHNICAL DATA

Panel
fibre-reinforced perforated calcium sulphate panel, optionally with surrounding edge protection against impacts and humidity, perforated raised floor panel

Panel Thickness
approx. 38 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
approx. 57 kg/m²

Standard Pedestal Heights
25 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^6\ \Omega$

NORTEC sonic

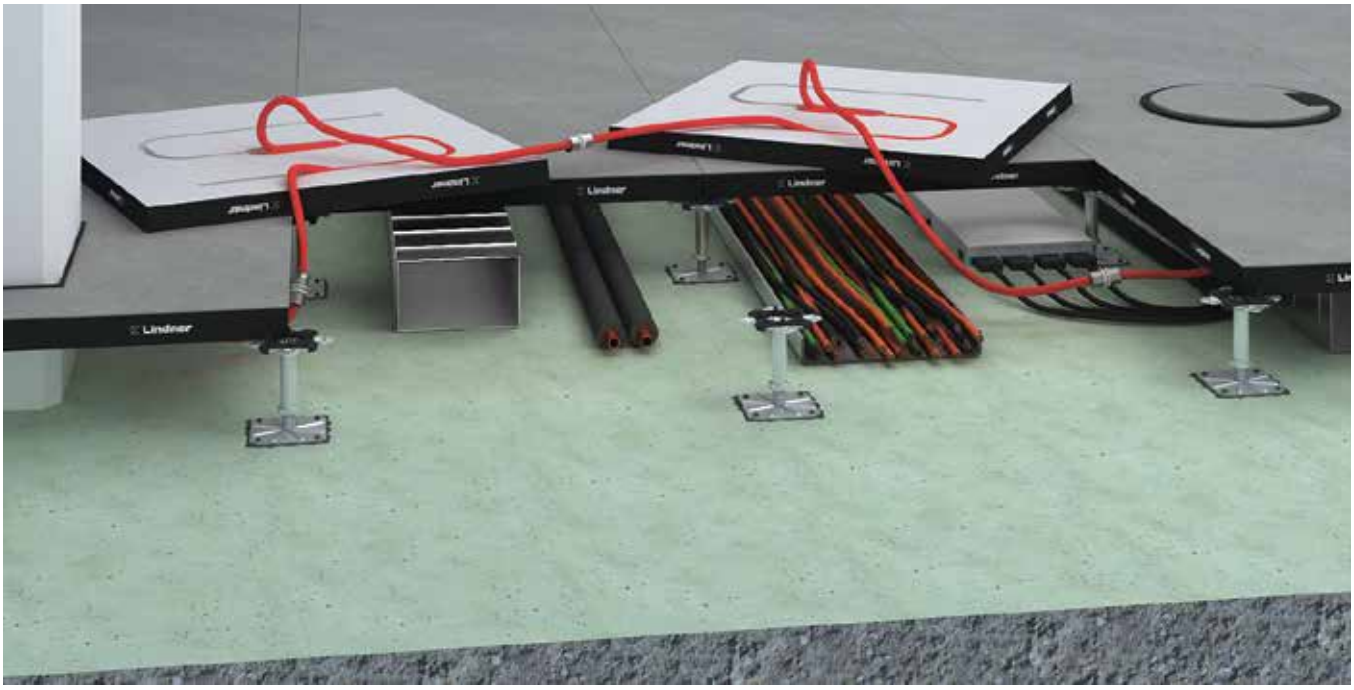
STATICS ↘from page 112	**Load and Deflection Class** 1A (2 kN) - 3A (4 kN) **Safety Factor** 2 **Tested Seismic Safety** possible in A - F in acc. with IBC (International Building Code)/AC 156
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1
CLIMATE REGULATION ↘from page 122	**Air Flow Rate at 20 Pa** 192 - 1,294 m³/h (panel without surface covering) **Free Cross Section** 4 - 24 %
COVERINGS ↘from page 94	textile coverings, elastic coverings, WOODline, loose-laid tiles
APPLICATION AREAS	**Work:** common areas, stage and studio rooms, office buildings, data centres, rooms for radio and television production, technical rooms, assembly rooms **Education:** libraries, research rooms, higher education institutions, schools **Recreation and Culture:** banks, sales areas, places of assembly, museums **Industry:** laboratories and research, clean rooms, power plants **Public Institutions:** court and government buildings
SUSTAINABILITY ↘from page 126	IBR test seal
SERVICES ↘from page 130	take-back guarantee, leasing option
ACCESSORIES ↘from page 106	facings, expansion joints, electrical outlets, cavity barriers, bridging profiles, reinforcement profiles

NORTEC comfort

RAISED FLOOR WITH UNDERFLOOR HEATING

The NORTEC comfort Raised Floor System generates a pleasant atmosphere for the user: intelligent heating and cooling systems in the raised floor panel regulate the indoor climate to optimal values – in summer and winter. The system provides integrated underfloor heating with great heat reflection and high efficiency and is ideal for subsequent installation. This enables comfortable living and working conditions. Architects benefit from greater freedom in terms of planning in their interior designs, as there is no need to consider radiators. NORTEC comfort is also convincing due to its low height and low weight.

+ quick reaction time during heating and cooling
+ almost all covering types possible
+ environmental-friendly due to low flow temperature
+ flexibility at every location



TECHNICAL DATA

Panel
fibre-reinforced calcium sulphate panel with integrated heating and cooling lines, optionally with galvanised steel sheet at bottom side, surrounding edge trim protection against damage and humidity on request

Panel Thickness
44 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
66 kg/m²

Standard Pedestal Heights
25 - 2,000 mm

Pedestal Grid
600 x 600 mm

NORTEC comfort

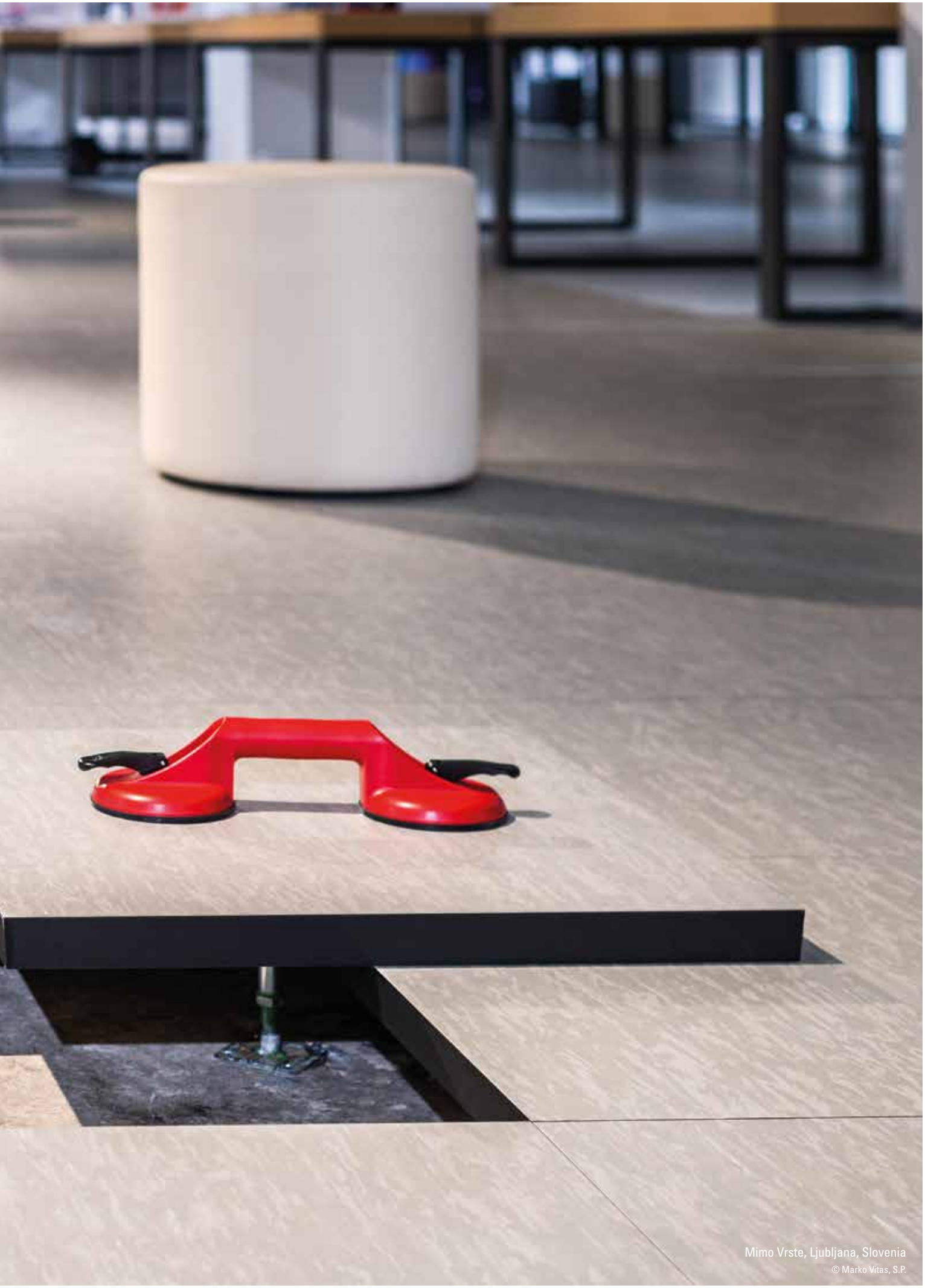
STATICS ↘from page 112	**Load and Deflection Class** 2A (3 kN) - 6A (6 kN) in acc. with EN 12825 **Safety Factor** 2 **Tested Seismic Safety** possible in A - F in acc. with IBC (International Building Code)/AC 156
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1 **Fire Resistance Performance of the System** REI 30 in acc. with EN 13501-1, REI 30 in acc. with EN 13501-2
CLIMATE REGULATION ↘from page 122	**Heating Performance** 84 - 95 W/m² in acc. with EN 1264-2 **Cooling Performance** 25 - 36 W/m² in acc. with EN 1264-5 **Heating Line** ø 12 mm **Permissible Operating Pressure** ≤ 10 bar
COVERINGS ↘from page 94	textile coverings, elastic coverings, STONEline, loose-laid tiles
APPLICATION AREAS	**Work:** common areas, office buildings, assembly rooms **Education:** libraries, higher education institutions, schools **Recreation and Culture:** banks, sales areas, museums, places of assembly **Public Institutions:** court and government buildings **Public Areas:** entrance areas, necessary corridors
SUSTAINABILITY ↘from page 126	IBR test seal, FSC® certified
SERVICES ↘from page 130	leasing option
ACCESSORIES ↘from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, bridging profiles, reinforcement profiles

HIGH-DENSITY CHIPBOARD PANELS

A TRUE ECONOMIC MIRACLE

Our high-density chipboard panels are the best choice when your project places equal emphasis on quality and economic efficiency. The meticulous selection of raw materials during manufacturing in our production facilities ensures low emission values. These raised floor panels made from chipboard material are both a CO_2 sink and FSC® certified, so they are particularly sustainable. Their low weight makes these floor panels very easy to handle. Cut panels and cut-outs are also simple to realise. Their remarkable dimensional accuracy enables a high sealing of joints in air-ventilated floors. Depending on your needs, we are able to respond individually to the most diverse wishes. Special formats are also possible.

+ low system weight
+ very good price-performance ratio
+ can be combined with other floor systems
+ special formats possible



Mimo Vrste, Ljubljana, Slovenia

LIGNA

RAISED FLOOR FOR MORE ECONOMIC EFFICIENCY

The good price-performance ratio of our LIGA Raised Floor Panels makes them an interesting solution for a wide range of application areas: this includes for example offices and technical rooms.
LIGNA is easy to process – no matter if cut panels or subsequent cut-outs are required. Due to its low weight, the raised floor panel can be handled effortlessly. The dimensional accuracy in particular enables an exceptionally high sealing of joints in air-ventilated floors. A thoughtful selection of raw materials results in the lowest possible emission values. We are also happy to supply special formats.

+ quick installation
+ meets the requirements of the Indoor Air Comfort Gold Label

TECHNICAL DATA

Panel
high-density chipboard panel in formaldehyde class E1, coated with steel sheet or humidity protection at bottom side, surrounding edge trim protection against damage and humidity

Panel Thickness
28.5 - 38.5 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
25 - 33 kg/m²

Standard Pedestal Heights
25 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^6\ \Omega$

LIGNA

STATICS ↘ from page 112	**Load and Deflection Class** 1A (2 kN) - 5A (5 kN) in acc. with EN 12825 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** difficult to ignite in acc. with EN 13501-1 **Fire Resistance Performance of the System** F 30 in acc. with DIN 4102-2 as per AbP, REI 30 in acc. with EN 13501-2 as per classification report
ACOUSTICS ↘ from page 117	**Normalised Flanking Level Difference $D_{n,f,w}$** 45 - 59 dB **Rated sound Reduction Index R_w** 62 dB **Reduction of Impact Sound Pressure Level ΔL_w** 16 - 33 dB **Normalised Flanking Impact Sound Pressure Level $L_{n,f,w}$** 69 - 30 dB
COVERINGS ↘ from page 94	textile coverings, elastic coverings, WOODline, loose-laid tiles
APPLICATION AREAS	**Work:** office buildings, technical rooms, common areas, rooms for radio and television production, assembly rooms **Education:** research rooms, higher education institutions, schools **Recreation and Culture:** banks, sales areas **Industry:** power plants, laboratories and research **Public Institutions:** court and government buildings **Public Areas:** entrance areas
SUSTAINABILITY ↘ from page 126	carbon sink, verified EPD in acc. with ISO 14025 and EN 15804, FSC® certified
ACCESSORIES ↘ from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, bridging profiles, reinforcement profiles

LIGNA power

RAISED FLOOR FOR HEAVY-DUTY AREAS

Our LIGNA power Raised Floor System takes on the bearing role for heavy tasks. There are many areas where floors need to withstand higher loads. They include for instance production halls, technical rooms and special areas. This is where LIGNA power offers unsurpassed load capacity and withstands high loads. Dimensional accuracy enables in particular an exceptionally high sealing of joints in air-ventilated floors. A thoughtful selection of raw materials results in the lowest possible emission values.

+ special substructure
+ reinforced raised floor pedestals
+ accessible with heavy lifting equipment

TECHNICAL DATA

Panel
high-density chipboard panel in formaldehyde class E1, coated with steel sheet or humidity protection at bottom side, surrounding edge trim protection against damage and humidity

Panel Thickness
38.5 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
approx. 38 - 42 kg/m²

Standard Pedestal Heights
133 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^6\ \Omega$

LIGNA power

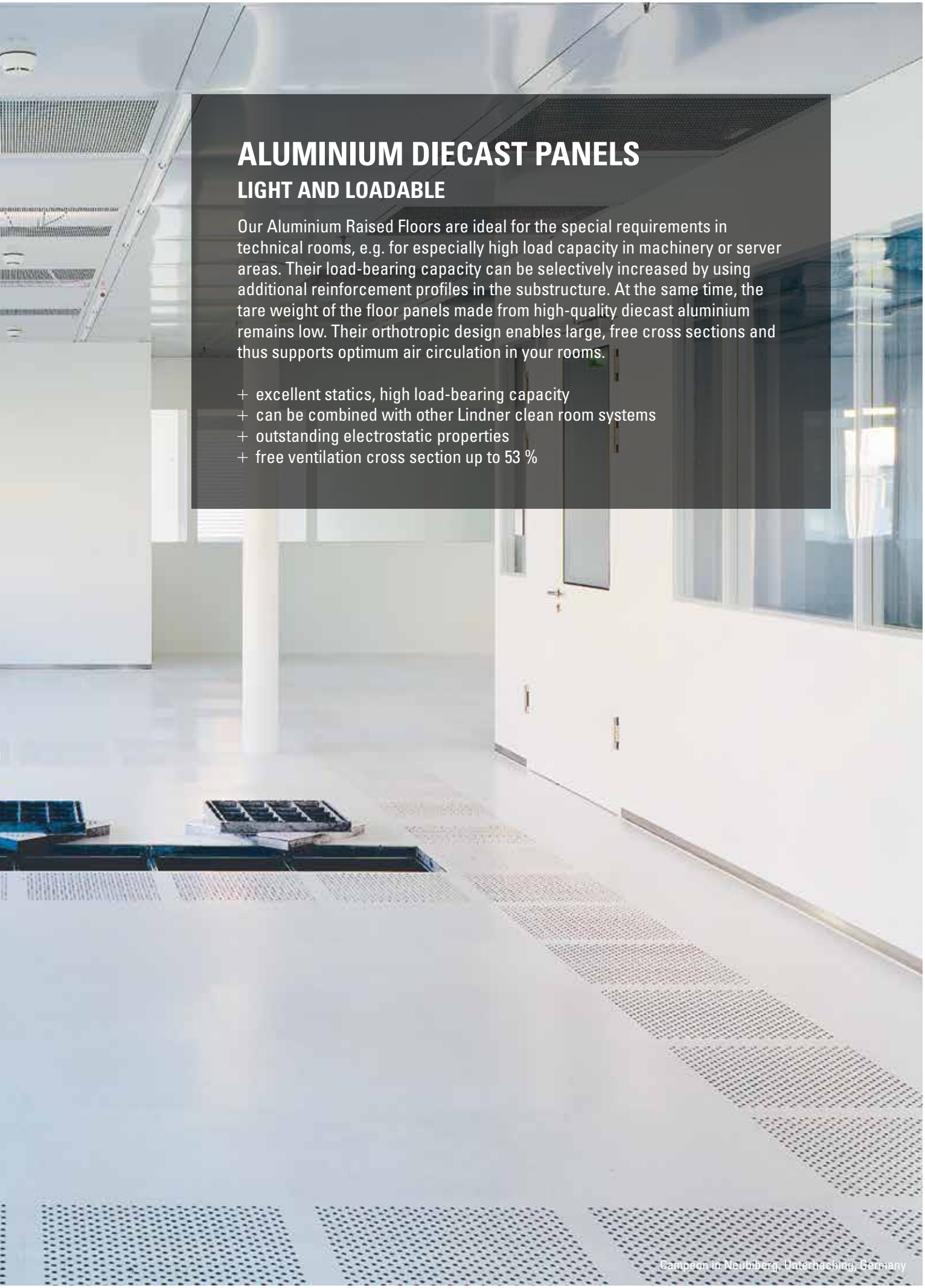
STATICS ↘ from page 112	**Load and Deflection Class** 6A (6 - 7 kN) in acc. with EN 12825 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** difficult to ignite in acc. with EN 13501-1 **Fire Resistance Performance of the System** F 30 in acc. with DIN 4102-2 as per AbP
COVERINGS ↘ from page 94	textile coverings, elastic coverings, WOODline, loose-laid tiles
APPLICATION AREAS	**Work:** data centres, technical rooms, stage and studio rooms, rooms for radio and television production, assembly rooms **Education:** libraries, research rooms, higher education institutions, schools **Recreation and Culture:** banks, sales areas **Industry:** power plants, laboratories and research **Public Institutions:** court and government buildings **Public Areas:** entrance areas
SUSTAINABILITY ↘ from page 126	carbon sink, verified EPD in acc. with ISO 14025 and EN 15804, FSC® certified
ACCESSORIES ↘ from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, switchboard frame, bridging profiles, reinforcement profiles

ALUMINIUM DIECAST PANELS

LIGHT AND LOADABLE

Our Aluminium Raised Floors are ideal for the special requirements in technical rooms, e.g. for especially high load capacity in machinery or server areas. Their load-bearing capacity can be selectively increased by using additional reinforcement profiles in the substructure. At the same time, the tare weight of the floor panels made from high-quality diecast aluminium remains low. Their orthotropic design enables large, free cross sections and thus supports optimum air circulation in your rooms.

+ excellent statics, high load-bearing capacity
+ can be combined with other Lindner clean room systems
+ outstanding electrostatic properties
+ free ventilation cross section up to 53 %



Campeon in Neubiberg, Unterhaching, Germany

PRODATA

ALUMINIUM RAISED FLOOR FOR HIGHEST REQUIREMENTS

The PRODATA Raised Floor System is based on a high-quality aluminium diecast panel in orthotropic design. This is produced with the utmost precision and fitting accuracy. Its high load-bearing capacity and abrasion resistance of air predestine PRODATA for use in all clean rooms and in other application areas with high technical requirements. The raised floor panels can optionally be ordered with covering or coating. The coating can be conductive if required.

+ produced with the utmost precision and fitting accuracy
+ aerodynamically abrasion resistant, anti-magnetic and corrosion-resistant
+ very high electrostatic discharge
+ high load-bearing capacity with low deflection
+ easy to process for subsequent cut-outs
+ high economic efficiency due to a long service life
+ suitable for clean rooms

TECHNICAL DATA

Panel
high-quality aluminium diecast panel in orthotropic design

Panel Thickness
50 - 60 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
approx. 27 - 42 kg/m²

Standard Pedestal Heights
45 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^4\ \Omega$

PRODATA

STATICS ↘from page 112	**Load and Deflection Class** 6B (7 - 10 kN) in acc. with EN 12825 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A1 (non-combustible) in acc. with DIN 4102-1
COVERINGS ↘from page 94	elastic coverings, conductive or non-conductive powder coating
APPLICATION AREAS	**Work:** data centres, technical rooms, common areas, stage and studio rooms, office buildings, rooms for radio and television production, assembly rooms **Education:** research rooms, libraries **Health:** laboratories **Industry:** clean rooms, power plants, production facilities, laboratories and research
SERVICES ↘from page 130	repurchase offer, leasing option
ACCESSORIES ↘from page 106	facings, expansion joints, electrical outlets, cavity barriers, switchboard frames, bridging profiles, reinforcement profiles

ALUVENT

ALUMINIUM RAISED FLOOR WITH VENTILATION FUNCTION

The ALUVENT Ventilation Panel is similar to PRODATA in that it consists of a high-quality aluminium diecast panel in orthotropic design. The drilling of holes turns the PRODATA into an ALUVENT. The bending stiffness of the aluminium panels varies in acc. with the hole pattern and number of drillings. The system is available with different free cross sections for ventilation purposes – ideal for your special requirements.

+ produced with the utmost precision and fitting accuracy
+ aerodynamically abrasion resistant, anti-magnetic and corrosion-resistant
+ easy handling due to the low weight of the panel
+ very high electrostatic discharge
+ high load-bearing capacity with low deflection
+ high economic efficiency due to a long service life
+ suitable for clean rooms

TECHNICAL DATA

Panel
high-quality aluminium diecast panel in orthotropic design, perforated

Panel Thickness
50 - 60 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
approx. 27 - 42 kg/m²

Standard Pedestal Heights
25 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^4\ \Omega$

ALUVENT

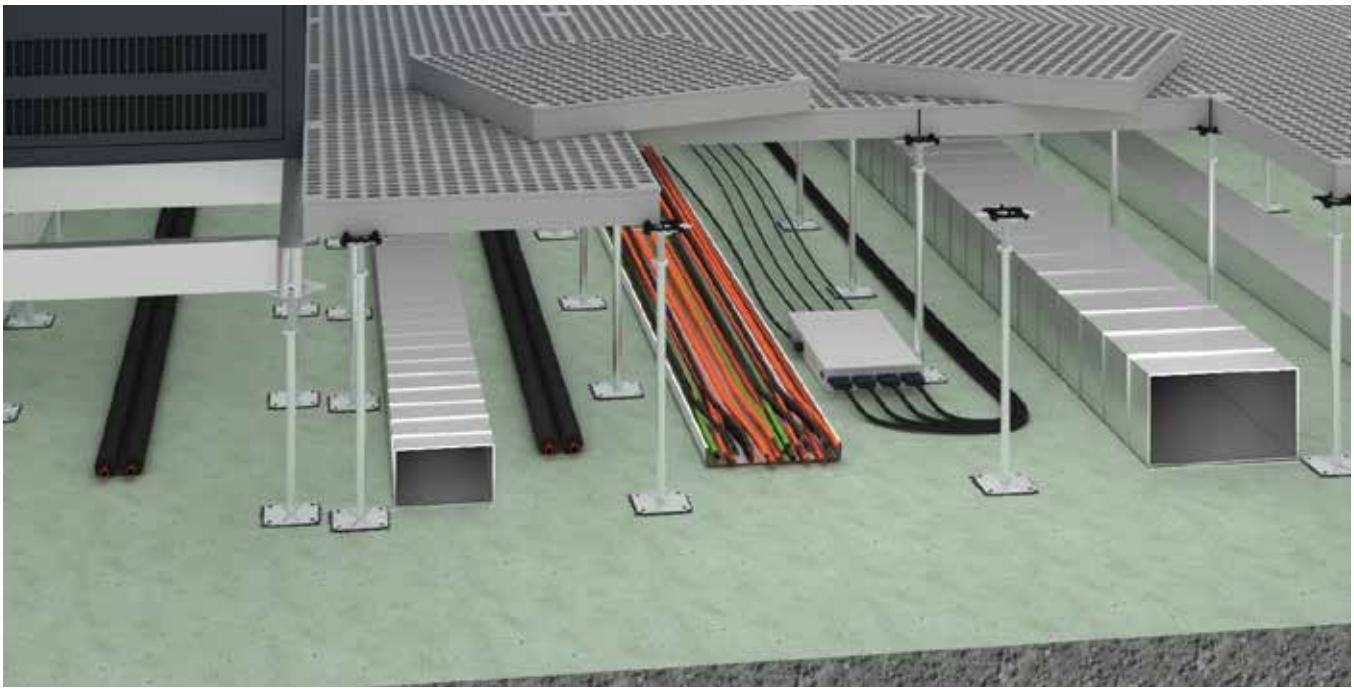
STATICS ↘ from page 112	**Load and Deflection Class** 5B (5 kN) - 6B (7 - 10 kN) in acc. with EN 12825 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with DIN 4102-1, A1 (non-combustible) in acc. with EN 13501-1
CLIMATE REGULATION ↘ from page 122	**Ventilation** free cross section 3.6 - 45.0 %
COVERINGS ↘ from page 94	elastic coverings, conductive or non-conductive powder coating
APPLICATION AREAS	**Work:** data centres, technical rooms, common areas, stage and studio rooms, office buildings, rooms for radio and television production, assembly rooms **Education:** research rooms, libraries, higher education institutions, schools **Health:** laboratories **Industry:** clean rooms, production facilities, power plants, laboratories and research
SERVICES ↘ from page 130	repurchase offer, leasing option
ACCESSORIES ↘ from page 106	facings, expansion joints, electrical outlets, cavity barriers, switchboard frames, bridging profiles, reinforcement profiles

OCTOGRATE

ALUMINIUM RAISED FLOOR WITH VENTILATION FUNCTION

The OCTOGRATE Raised Floor System has a free cross section of more than 53 % and was developed for clean room concepts in which an extremely high volume of air with a simultaneous low loss of pressure is required. OCTOGRATE is based on a high-quality aluminium diecast panel in orthotropic design. This is manufactured with the greatest precision and fitting accuracy and is usually conductively coated. These properties predestine this raised floor panel for use in clean rooms.

+ excellent statics
+ outstanding electrostatic properties
+ integration of reinforcement profiles possible
+ can be combined with other Lindner Clean Room Systems, such as walls and ceilings



TECHNICAL DATA

Panel
high-quality aluminium diecast panel in orthotropic design, perforated

Panel Thickness
62 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
approx. 31 kg/m²

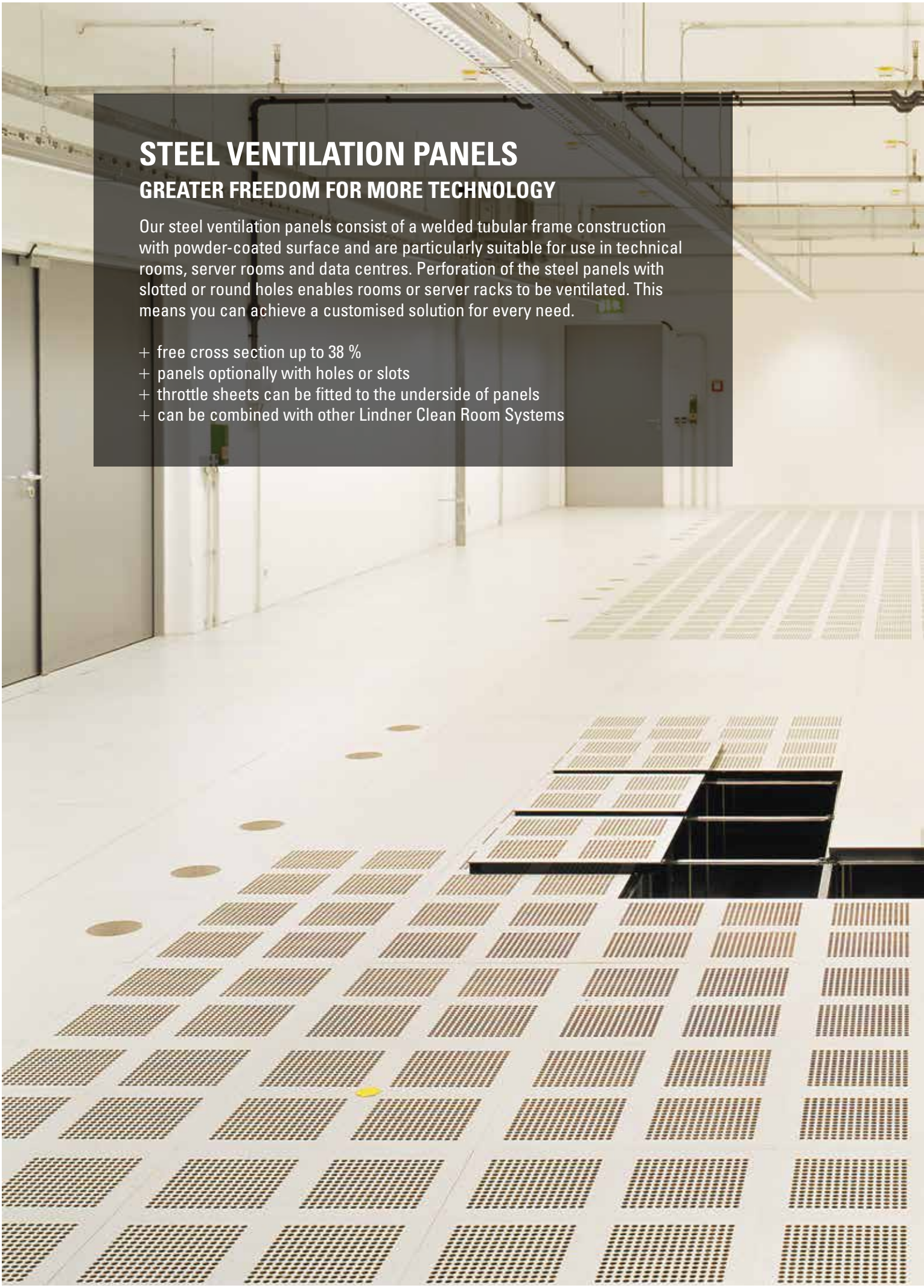
Standard Pedestal Heights
45 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^4\ \Omega$

OCTOGRATE

STATICS ↘ from page 112	**Load and Deflection Class** 6B (7 kN) in acc. with EN 12825 **Safety Factor** 2
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with DIN 4102-1, A1 (non-combustible) in acc. with EN 13501-1
CLIMATE REGULATION ↘ from page 122	**Ventilation** free cross section > 53 %
COVERINGS ↘ from page 94	no covering possible, conductive or non-conductive powder coating
APPLICATION AREAS	**Work:** data centres, technical rooms, common areas, stage and studio rooms, office buildings, rooms for radio and television production, assembly rooms **Education:** research rooms, libraries **Health:** laboratories **Industry:** clean rooms, power plants, production facilities, laboratories and research
SERVICES ↘ from page 130	repurchase offer, leasing option
ACCESSORIES ↘ from page 106	facings, expansion joints, electrical outlets, cavity barriers, switchboard frames, bridging profiles, reinforcement profiles



STEEL VENTILATION PANELS

GREATER FREEDOM FOR MORE TECHNOLOGY

Our steel ventilation panels consist of a welded tubular frame construction with powder-coated surface and are particularly suitable for use in technical rooms, server rooms and data centres. Perforation of the steel panels with slotted or round holes enables rooms or server racks to be ventilated. This means you can achieve a customised solution for every need.

+ free cross section up to 38 %
+ panels optionally with holes or slots
+ throttle sheets can be fitted to the underside of panels
+ can be combined with other Lindner Clean Room Systems

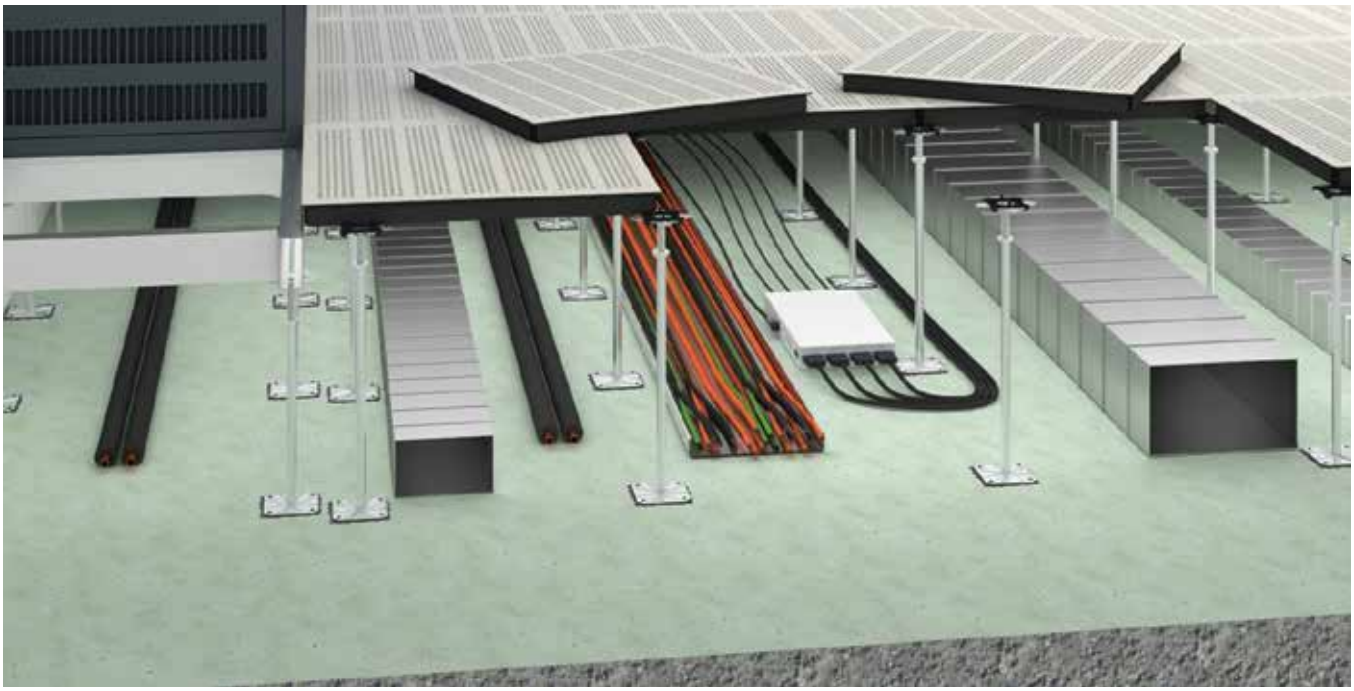
Campeon in Neubiberg, Unterhaching, Germany

VENTEC

RAISED FLOOR AS TUBULAR FRAME CONSTRUCTION

The VENTEC Raised Floor System is ideal for use in technical and server rooms and data centres. The extremely stable raised floor panels can be supplied with or without perforations and holes. Free cross sections of 16 % and 23 % can be achieved as standard on panels with slotted holes. We can achieve free cross sections of 15 %, 24 % and 38 % on panels with round holes. On request, we can realise individual solutions with versions that have partial or patterned holes and other cross sections.

+ free cross section up to 38 %
+ panels optionally with holes, slots or as full panels
+ throttle sheets can be fitted to the underside of panels
+ can be combined with other Lindner Raised Floor Panels



TECHNICAL DATA

Panel
carrier panel made in a welded tubular frame construction with powder-coated surface

Panel Thickness
30 - 50 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
40 - 60 kg/m²

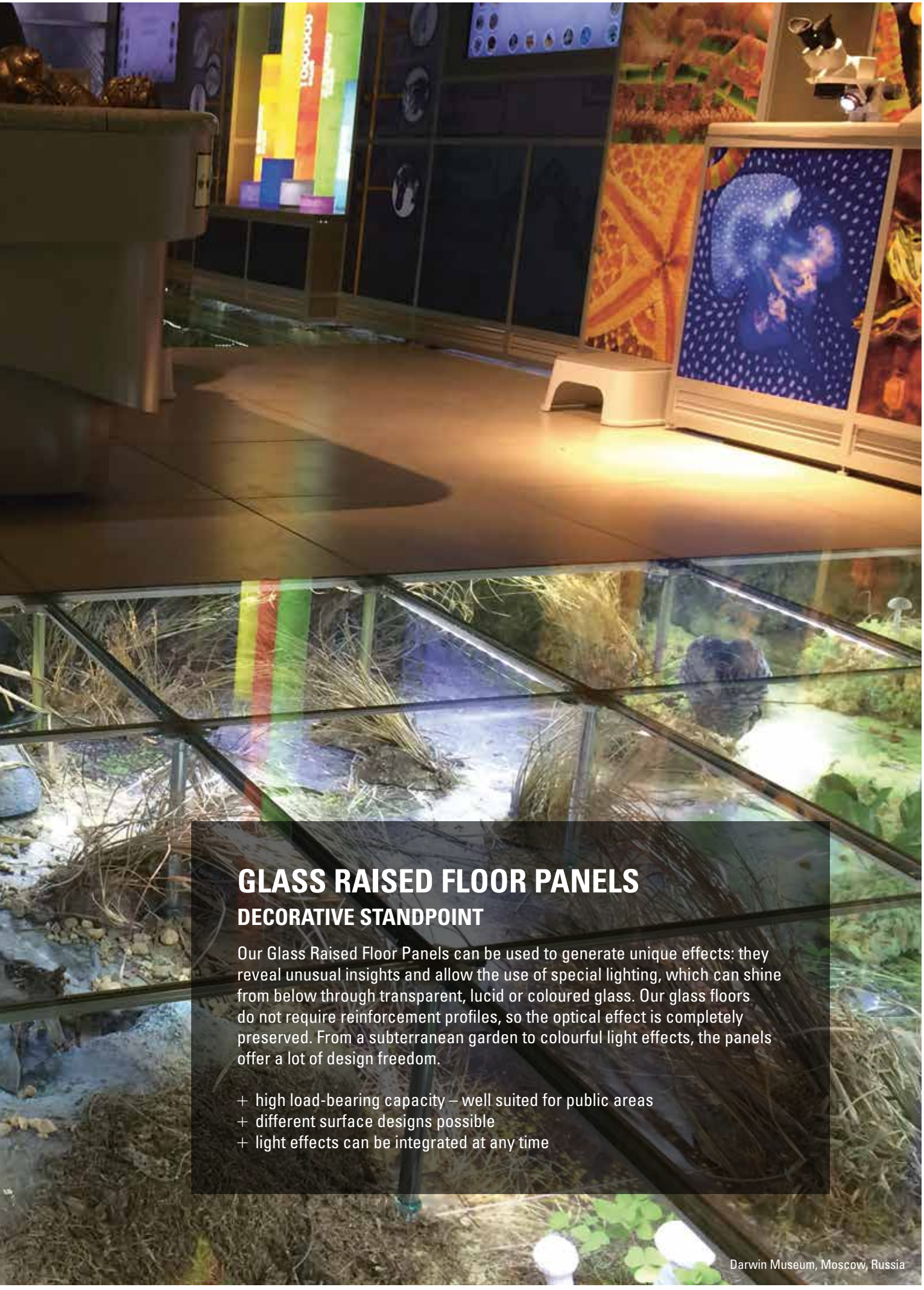
Standard Pedestal Heights
25 - 2,000 mm

Pedestal Grid
600 x 600 mm

Resistance to Earth
$\geq 1 \times 10^5\ \Omega$

VENTEC

STATICS ↘ from page 112	**Load and Deflection Class** 2A - 6A (3 - 15 kN) in acc. with EN 12825 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with DIN 4102-1, A1 (non-combustible) in acc. with EN 13501-1
CLIMATE REGULATION ↘ from page 122	**Air Flow Rate at 25 Pa** 375 - 2,500 m³/h (panel without covering) **Free Cross Section with Round Hole** 15 % / 24 % / 38 % **Free Cross Section with Slotted Hole** 16 % / 23 %
COVERINGS ↘ from page 94	textile coverings, elastic coverings, loose-laid tiles
APPLICATION AREAS	**Work:** data centres, technical rooms, common areas, stage and studio rooms, office buildings, rooms for radio and television production, assembly rooms **Education:** research rooms, libraries, higher education institutions, schools **Health:** laboratories **Industry:** clean rooms, production facilities, power plants, laboratories and research
SERVICES ↘ from page 130	leasing option
ACCESSORIES ↘ from page 106	facings, expansion joints, switchboard frames, bridging profiles, reinforcement profiles



GLASS RAISED FLOOR PANELS

DECORATIVE STANDPOINT

Our Glass Raised Floor Panels can be used to generate unique effects: they reveal unusual insights and allow the use of special lighting, which can shine from below through transparent, lucid or coloured glass. Our glass floors do not require reinforcement profiles, so the optical effect is completely preserved. From a subterranean garden to colourful light effects, the panels offer a lot of design freedom.

+ high load-bearing capacity – well suited for public areas
+ different surface designs possible
+ light effects can be integrated at any time

Darwin Museum, Moscow, Russia

LUMEN

RAISED FLOOR WITH GLASS PANELS

The LUMEN Raised Floor System reveals unusual insights and provides the opportunity for striking lighting from below. Our glass floors do not require reinforcement profiles and can be combined with every Lindner Floor System. They therefore ensure an aesthetic and functional overall result. We can develop integrated lights and lighting systems for you that give your glass floor an impressive effect. We are happy to use our many years of lighting experience to assist you. Simply let us undertake the lighting design and calculation, for example.

+ solid glass panel
+ three-layer safety glass
+ no reinforcement profiles required
+ optical surface designs (company logos) and technical surface treatment (slip-resistance) can be realised

TECHNICAL DATA

Panel
laminated safety glass (3 layers), optionally in a slip-resistant design, available in standard float glass design or as white glass

Panel Thickness
approx. 38 mm

Dimensional Deviation
class 1 in acc. with EN 12825

System Weight
approx. 89 kg/m²

Standard Pedestal Heights
25 - 2,000 mm

Pedestal Grid
600 x 600 mm

LUMEN

STATICS ↘from page 112	**Load and Deflection Class** 5A (5 kN) in acc. with EN 12825 **Safety Factor** 2
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with DIN 4102-1, A1 (non-combustible) in acc. with EN 13501-1
COVERINGS ↘from page 94	optionally with slip-resistant screen printing (R9 - R12), various print designs and inlay films possible, versions in float glass, white glass or frosted glass
APPLICATION AREAS	**Work:** common areas, stage and studio rooms, office buildings, rooms for radio and television production, assembly rooms, technical rooms **Education:** libraries, research rooms, higher education institutions, schools **Recreation and Culture:** sales areas, shopping centres, museums, banks **Hotels and Catering:** restaurants and canteens, hotels and resorts **Public Areas:** entrance areas
ACCESSORIES ↘from page 106	facings, expansion joints, bridging profiles, reinforcement profiles

HOLLOW FLOORS

ABOVE AND BENEATH – EVERYTHING IN PERFECT ORDER

Our hollow floors combine the advantages of a traditional screed surface with the advantages of a raised floor. The load-bearing layer is suitable for bonding all common coverings. The pedestals in the "invisible" cavity allow an uncomplicated installation of building technology. The combination of hollow and raised floor enables maximum flexibility.

+ height-adjustable pedestals
+ jointless surface
+ best fire protection properties
+ quick installation
+ free choice of coverings
+ tested in acc. with EN 13213 for hollow floors

Phoenix Contact, Bad Pyrmont, Germany

FIBRE-REINFORCED CALCIUM SULPHATE PANELS

from page 52

FLOOR and more®
FLOOR and more® power
FLOOR and more® acoustic
FLOOR and more® comfort
FLOOR and more® arena
FLOOR and more® sonic

HIGH-DENSITY CEMENT FIBRE PANELS

from page 66

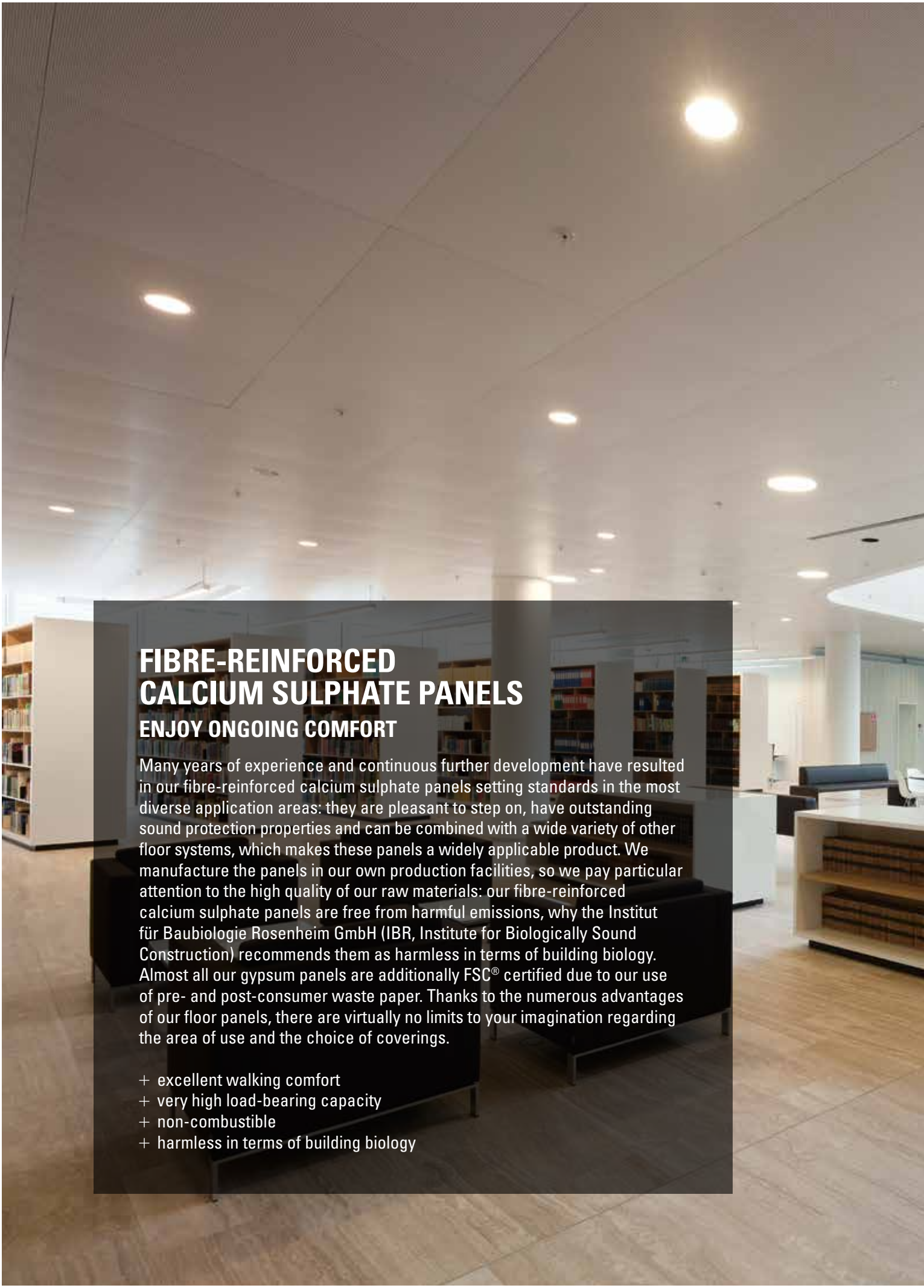
HYDRO
HYDRO power
HYDRO comfort

Library Bridge, Bad Vilbel, Germany

HOLLOW FLOORS

	TECHNICAL DATA	ACOUSTICS	FIRE PROTECTION	
		Architectural Acoustics *to ISO 10848 **to ISO 140140 ***to ISO 140 ****to ISO 354 |	**Reaction to Fire Performance** *to DIN 4102-1 and EN 13501-1	**Fire Resistance Performance** *to DIN 4102-2 **to EN 13501-2
FIBRE-REINFORCED CALCIUM SULPHATE PANELS				
FLOOR and more® ↘ from page 54 dry hollow floors for standard requirements	panel thickness: 30 - 40 mm system weight: 41 - 55 kg/m²	$D_{n,f,w}$: 36 - 59 dB* R_w: 62 - 64 dB** ΔL_w: 9 - 31 dB*** $L_{n,f,w}$: 92 - 37 dB*	non-combustible*	F 30* REI 30 and REI 60**
FLOOR and more® power ↘ from page 56 dry hollow floors for heavy-duty areas	panel thickness: 40 - 44.5 mm system weight: 62 - 83 kg/m²	–	non-combustible*	F 30* REI 30 and REI 60**
FLOOR and more® acoustic ↘ from page 58 dry hollow floors for acoustical adjustment	panel thickness: 40 - 70 mm system weight: 50 - 55 kg/m²	α_w: 0.15 - 0.85**** Class: B - E	non-combustible*	–
FLOOR and more® comfort ↘ from page 60 dry hollow floors with heating and cooling function	panel thickness: 40 - 44.5 mm system weight: 52 - 85 kg/m²	–	non-combustible*	F 30* REI 30**
FLOOR and more® arena ↘ from page 62 dry hollow floors for stands constructions	panel thickness: 40 - 44 mm system weight: 70 - 80 kg/m²	–	non-combustible*	F 90 (from above)*
FLOOR and more® sonic ↘ from page 64 dry hollow floors with seepage ventilation	panel thickness: 40 mm system weight: 42 kg/m²	–	non-combustible*	–
HIGH-DENSITY CEMENT FIBRE PANELS				
HYDRO ↘ from page 68 dry hollow floors for humid areas	panel thickness: 40 mm system weight: 72 kg/m²	ΔL_w: 14 - 15 dB***	non-combustible	REI 30**
HYDRO power ↘ from page 70 dry hollow floors for humid/heavy-duty areas	panel thickness: 40.5 - 44.5 mm system weight: 75 - 85 kg/m²	–	non-combustible	REI 30**
HYDRO comfort ↘ from page 72 dry hollow floors for humid areas with underfloor heating	panel thickness: 40 - 44.5 mm system weight: 80 - 85 kg/m²	–	non-combustible	REI 30**

CLIMATE REGULATION		SUSTAINABILITY					STATICS
Heating and Cooling *in acc. with EN 1264 **in acc. with DIN EN 1026	**Ventilation** to DIN EN 1026	**Carbon-neutral**	**Cradle to Cradle Certified® Silver**	**verified EPD** to ISO 14025 | EN 15804	**FSC® certified**	**IBR Test Seal**	**Load Class** in acc. with EN 13213
–	–	optionally possible	✓	✓	✓	✓	1 (2 kN) - 5 (5 kN)
–	–	optionally possible	✓	–	✓	✓	6 (6 - 20 kN)
–	–	–	–	–	–	✓	2 (3 kN) - 5 (5 kN)
heating performance: 60 - 100 W/m² in acc. with EN 1264, cooling performance: 23 - 41 W/m² in acc. with EN 1264	–	–	–	–	✓	✓	3 (4 kN) - 6 (15 kN)
–	–	–	✓	–	✓	✓	5 kN/m²
–	free cross section: 4 - 24 %, air flow rate: 192 - 1,294 m³/h	–	–	–	–	✓	2 (3 kN) - 5 (5 kN)
–	–	–	–	–	✓	–	5 (5 kN)
–	–	–	–	–	✓	–	5 (5 kN) - 6 (15 kN)
heating performance: 60 - 100 W/m² in acc. with EN 1264, cooling performance: 23 - 40 W/m² in acc. with EN 1264	–	–	–	–	✓	–	3 (5 kN) - 6 (15 kN)



FIBRE-REINFORCED CALCIUM SULPHATE PANELS

ENJOY ONGOING COMFORT

Many years of experience and continuous further development have resulted in our fibre-reinforced calcium sulphate panels setting standards in the most diverse application areas: they are pleasant to step on, have outstanding sound protection properties and can be combined with a wide variety of other floor systems, which makes these panels a widely applicable product. We manufacture the panels in our own production facilities, so we pay particular attention to the high quality of our raw materials: our fibre-reinforced calcium sulphate panels are free from harmful emissions, why the Institut für Baubiologie Rosenheim GmbH (IBR, Institute for Biologically Sound Construction) recommends them as harmless in terms of building biology. Almost all our gypsum panels are additionally FSC® certified due to our use of pre- and post-consumer waste paper. Thanks to the numerous advantages of our floor panels, there are virtually no limits to your imagination regarding the area of use and the choice of coverings.

+ excellent walking comfort
+ very high load-bearing capacity
+ non-combustible
+ harmless in terms of building biology

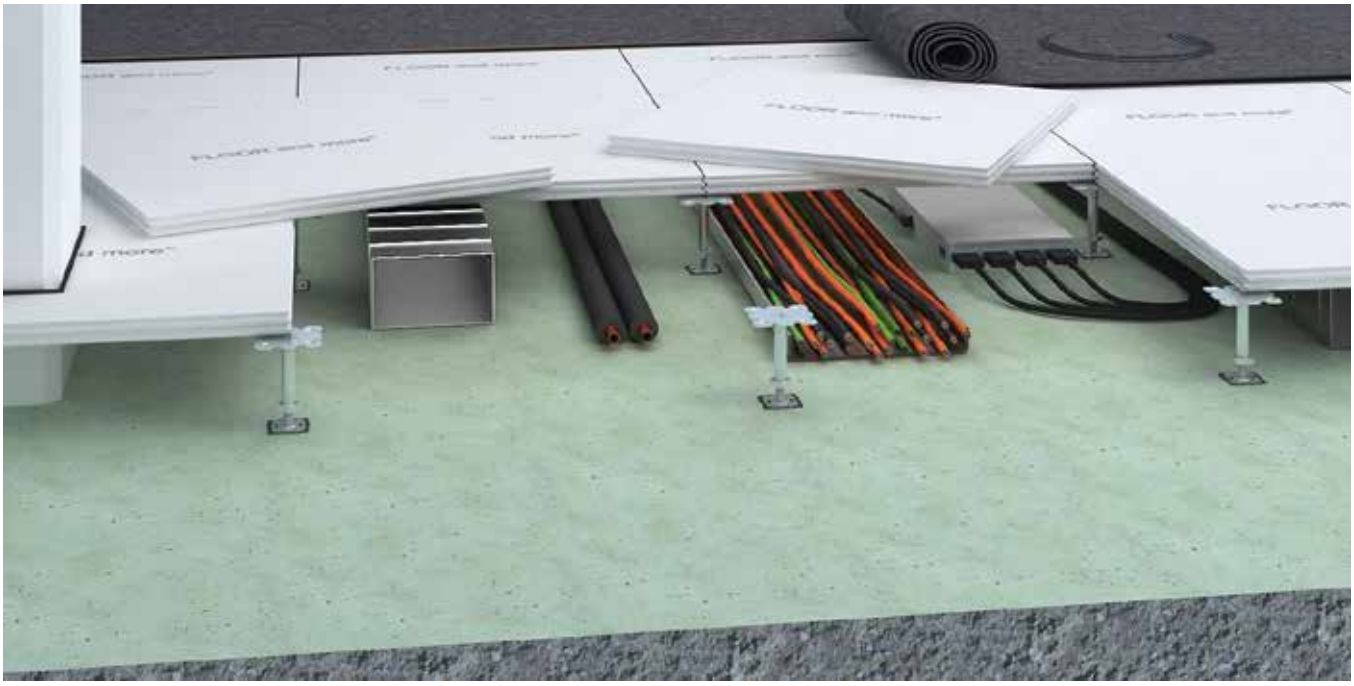
Horten Headquarters, Copenhagen, Denmark

FLOOR and more®

DRY HOLLOW FLOORS FOR HIGH DEMANDS

The FLOOR and more® Dry Hollow Floor System leaves nothing to be desired: non-combustible, acoustically extremely effective and loadable after just a day, it is the ideal product for a wide variety of needs. FLOOR and more® consists of a pedestal substructure and calcium sulphate floor panels that are bonded together. The system provides optimum walking comfort despite its low weight. Thanks to our in-house production, we have a direct influence on the selection of raw materials. This way we can always adapt our systems to individual customer requirements.
We ensure that our gypsum panels are free of harmful emissions: the Institut für Baubiologie Rosenheim GmbH (IBR, Institute for Biologically Sound Construction) also recommends NORTEC as harmless in terms of building biology. The numerous options for combination with other systems and the free choice of coverings offer a high degree of flexibility.

+ rapidly installed dry hollow floor system
+ accessible after just a day
+ jointless surface
+ free choice of coverings
+ acoustically effective



TECHNICAL DATA

Panel
fibre-reinforced calcium sulphate panel with tongue and grooving

Panel Thickness
30 - 40 mm

System Weight
41 - 55 kg/m²

Standard Pedestal Heights
40 - 2,000 mm

Pedestal Grid
600 x 600 mm

FLOOR and more®

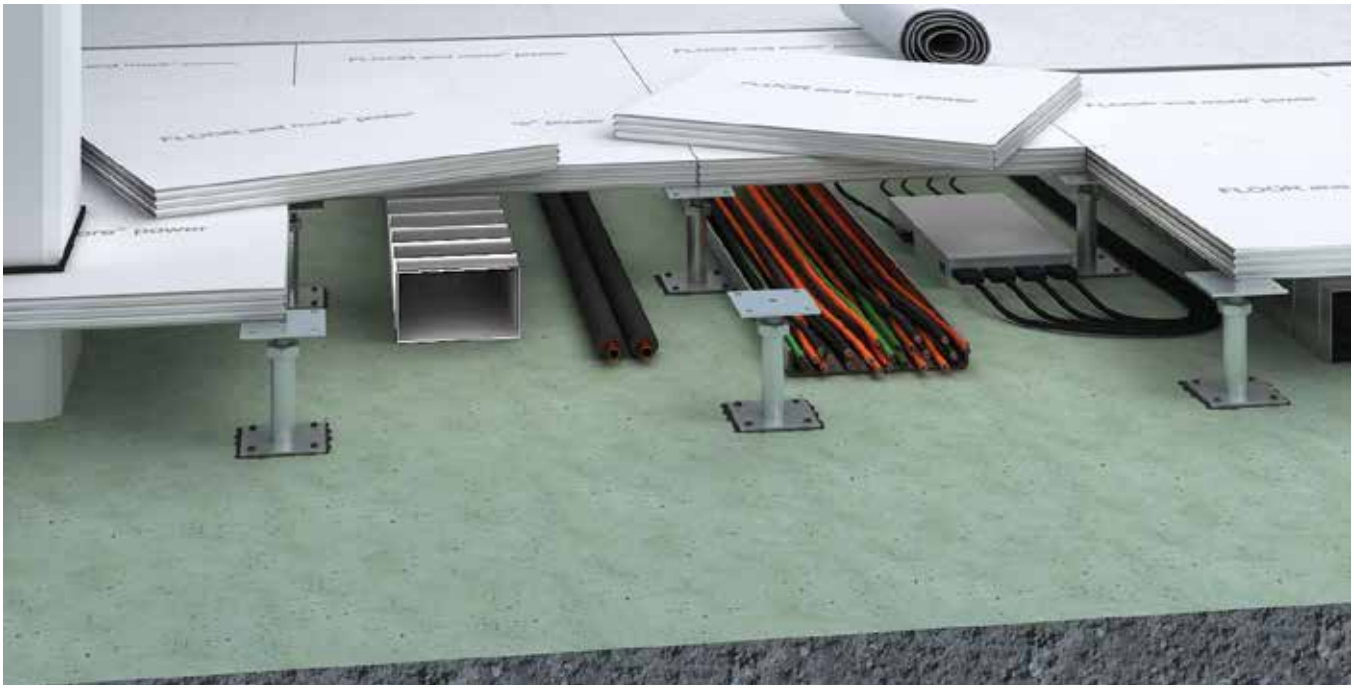
STATICS ↘ from page 112	**Load Class** 1 (2 kN) - 5 (5 kN) in acc. with EN 13213 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1 **Fire Resistance Performance of the System** F 30 in acc. with DIN 4102-2 as per AbP, REI 30 and REI 60 in acc. with EN 13501-2 as per classification report
ACOUSTICS ↘ from page 117	**Normalised Flanking Level Difference $D_{n,f,w}$** 39 - 63 dB **Rated Sound Reduction Index R_w** 62 - 64 dB **Reduction of Impact Sound Pressure Level ΔL_w** 9 - 41 dB **Normalised Flanking Impact Sound Pressure Level $L_{n,f,w}$** 92 - 32 dB
COVERINGS ↘ from page 94	textile coverings, elastic coverings, stone and ceramic coverings, STONEline
APPLICATION AREAS	**Work:** common areas, stage and studio rooms, office buildings, rooms for radio and television production, assembly rooms **Education:** libraries, research rooms, higher education institutions, schools **Recreation and Culture:** banks, shopping centres, cinemas and theatres, concert halls, museums, sports halls, stadiums, sales areas, places of assembly **Health:** clinics and hospitals, laboratories, operating theatres **Hotels and Catering:** restaurants and canteens, hotels and resorts **Industry:** production facilities, laboratories and research, power plants **Public Institutions:** court and government buildings **Transport:** train stations, airports, underground railways/tunnels **Public Areas:** entrance areas, necessary corridors
SUSTAINABILITY ↘ from page 126	Cradle to Cradle Certified® Silver, carbon-neutral possible on request, verified EPD in acc. with ISO 14025 and EN 15804, IBR test seal, FSC® certified
ACCESSORIES ↘ from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, revision openings, bridging profiles

FLOOR and more® power

DRY HOLLOW FLOORS FOR HEAVY-DUTY AREAS

The FLOOR and more® power Dry Hollow Floor System takes on the bearing role for heavy tasks. There are many sectors in which floors need to withstand higher loads. These include atria, production halls, museums and libraries. This is where FLOOR and more® power offers unsurpassed load capacity by supporting enormous loads.

+ special panel mixture
+ reinforced hollow floor pedestals
+ no reinforcement profiles required
+ accessible with heavy motorised lifting equipment



TECHNICAL DATA

Panel
fibre-reinforced calcium sulphate panel with tongue and grooving, optionally with galvanised steel sheet at bottom side

Panel Thickness
40 - 44.5 mm

System Weight
approx. 62 - 83 kg/m²

Standard Pedestal Heights
210 - 2,000 mm

Pedestal Grid
600 x 600 mm

FLOOR and more® power

STATICS ↘from page 112	**Load Class** 6 (6 - 20 kN) in acc. with EN 13213 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1 **Fire Resistance Performance of the System** F 30 in acc. with DIN 4102-2 as per AbP, REI 30 and REI 60 in acc. with EN 13501-2 as per classification report
COVERINGS ↘from page 94	textile coverings, elastic coverings, parquet, stone and ceramic coverings, STONEline, decorative or technical coating systems
APPLICATION AREAS	**Work:** stage and studio rooms, rooms for radio and television production, assembly rooms, office buildings **Recreation and Culture:** banks, shopping centres, cinemas and theatres, concert halls, museums, sales areas, places of assembly, sports halls, stadiums **Education:** libraries, research rooms, higher education institutions, schools **Health:** clinics and hospitals, laboratories, operating theatres **Hotels and Catering:** restaurants and canteens, hotels and resorts **Industry:** production facilities, laboratories and research, power plants **Public Institutions:** court and government buildings **Transport:** train stations, airports, underground railways/tunnels **Public Areas:** entrance areas, necessary corridors
SUSTAINABILITY ↘from page 126	Cradle to Cradle Certified® Silver, IBR test seal, FSC® certified, carbon-neutral possible on request
ACCESSORIES ↘from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, revision openings, bridging profiles

FLOOR and more® acoustic

DRY HOLLOW FLOORS FOR ACOUSTICAL ADJUSTMENT

The FLOOR and more® acoustic Dry Hollow Floor System ensures a pleasant acoustic experience: the perception of room acoustics largely depends on the reverberation time in the surroundings. Depending on use of the room, this should be reduced or even regulated by a targeted choice of materials and the size of surface areas. The FLOOR and more acoustic® Dry Hollow Floor type, for example, attains a sound absorption coefficient α_w of up to 0.75. This is due to an acoustic tray installed at bottom side of the floor panels, which reduces both the volume level and the reverberation time in rooms. Perforations in the floor panels also ensure optimum use of the air volume in the intermediate spaces as a resonance absorber.
We use our in-house certified test laboratories – equipped with innovative simulation and measurement technology – to test developments and products with different requirements. This reveals endless options regarding the choice of covering. Unique testing of your individual solution provides you with a reliable statement about its absorption properties even before execution.

+ different variants of acoustic panels for individual project requirements
+ numerous options due to a selection of suitable coverings

TECHNICAL DATA

Panel
fibre-reinforced perforated calcium sulphate panel with tongue and grooving

Panel Thickness
40 - 70 mm

System Weight
50 - 55 kg/m²

Standard Pedestal Heights
40 - 2,000 mm

Pedestal Grid
600 x 600 mm

FLOOR and more® acoustic

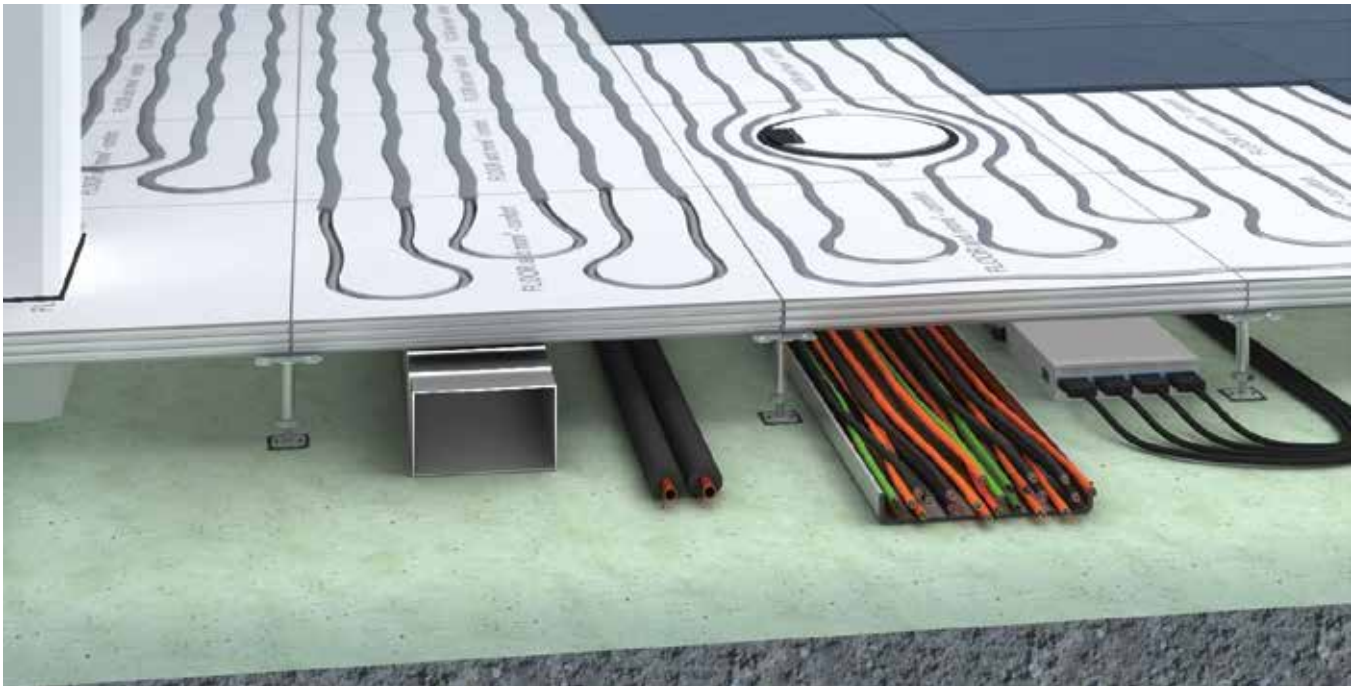
STATICS ↘ from page 112	**Load Class** 2 (3 kN) - 5 (5 kN) in acc. with EN 13213 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1
ACOUSTICS ↘ from page 117	**Sound Absorption Coefficient** α_w 0.15 - 0.75 depending on covering **Sound Absorption Class** B - E
COVERINGS ↘ from page 94	suitable, acoustically effective coverings
APPLICATION AREAS	**Work:** common areas, stage and studio rooms, office buildings, rooms for radio and television production, assembly rooms **Education:** libraries, higher education institutions, schools **Recreation and Culture:** banks, cinemas and theatres, concert halls, museums, sales areas, shopping centres, places of assembly **Public Institutions:** court and government buildings
SUSTAINABILITY ↘ from page 126	IBR test seal
ACCESSORIES ↘ from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, revision openings, bridging profiles

FLOOR and more® comfort

DRY HOLLOW FLOORS WITH UNDERFLOOR HEATING

The FLOOR and more® comfort Dry Hollow Floor System creates a pleasant and homely atmosphere in the room. An intelligent heating and cooling system ensures regulation of the indoor climate in both summer and winter. The underfloor heating integrated within the elements is impressive given its fast reaction time, great heat reflection and high efficiency.
The integrated underfloor heating offers advantages to architects, since there is no need for radiators and this creates greater freedom when planning interior designs. The FLOOR and more® comfort Floor System operates with a low supply temperature as standard, thus achieving additional energy savings – with outstanding efficiency for comfortable living and working. FLOOR and more® comfort is also convincing due to its low installation height and low weight.

+ fast reaction time during heating and cooling
+ accepts virtually all types of surface coverings
+ eco-friendly due to its reduced supply temperature



TECHNICAL DATA

Panel
fibre-reinforced calcium sulphate panel with tongue and grooving, pre-milled grooves on the top, optionally with galvanised steel sheet at bottom side

Panel Thickness
40 - 44.5 mm

System Weight
52 - 85 kg/m²

Standard Pedestal Heights
40 - 2,000 mm

Pedestal Grid
600 x 600 mm

FLOOR and more® comfort

STATICS ↘ from page 112	**Load Class** 3 (4 kN) - 6 (15 kN) in acc. with EN 13213 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1 **Fire Resistance Performance of the System** F 30 in acc. with DIN 4102-2 as per AbP, REI 30 in acc. with EN 13501-2 as per classification report
CLIMATE REGULATION ↘ from page 122	**Heating Performance** 60 - 100 W/m² in acc. with DIN EN 1264-2 **Cooling Performance** 23 - 41 W/m² in acc. with DIN EN 1264-5 **Heating Line** Ø 17 mm
COVERINGS ↘ from page 94	textile coverings, elastic coverings, parquet, stone and ceramic coverings
APPLICATION AREAS	**Work:** common areas, assembly rooms, stage and studio rooms, rooms for radio and television production **Education:** libraries, higher education institutions, schools, research rooms **Recreation and Culture:** banks, shopping centres, museums, sales areas, places of assembly **Health:** clinics and hospitals, laboratories **Hotels and Catering:** restaurants and canteens, hotels and resorts **Public Institutions:** court and government buildings **Transport:** train stations, airports **Public Areas:** entrance areas, necessary corridors
SUSTAINABILITY ↘ from page 126	IBR test seal, FSC® certified
ACCESSORIES ↘ from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, bridging profiles

FLOOR and more® arena

DRY HOLLOW FLOORS FOR STAND CONSTRUCTIONS

Building stand constructions in cinemas, concert halls and auditoriums always places extraordinary and project-related demands on the construction of the floor. All our findings from a large number of international projects have therefore been included in the development of our FLOOR and more® arena Dry Hollow Floor System. Massive and thus quick to install, comparatively light yet highly loadable, with a high degree of prefabrication and at the same time enormously flexible – this system floor is equal to any challenge.
The calcium sulphate planking is also decisive here: it achieves building material class A1 (non-combustible). FLOOR and more® arena can be adapted to any installation situation, whether on an unfinished floor that is level, sloped or stepped. The implementation as radial or polygonal stands or as a pressurised floor is always possible.

+ highly load-bearing layer, non-combustible
+ floor can be pressurised for ventilation
+ quick installation due to a high degree of prefabrication
+ substructure and planking from our own production
+ all step shapes (straight, radial or free form) possible
+ cavity can be used for technical installations

TECHNICAL DATA

Panel
fibre-reinforced calcium sulphate panel with tongue and grooving

Panel Thickness
40 - 44 mm

System Weight
approx. 70 - 80 kg/m²

Standard Pedestal Heights
200 - 2,000 mm

Pedestal Grid
adapted on a project-related basis

FLOOR and more® arena

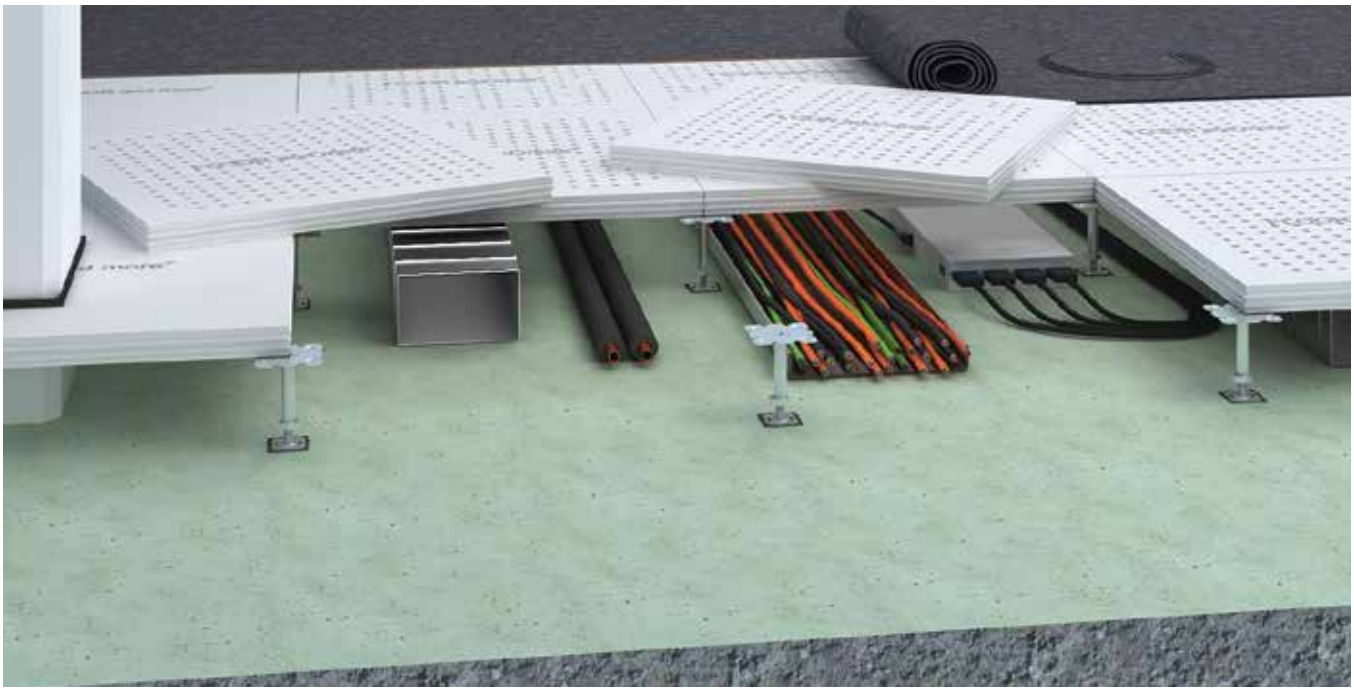
STATICS ↘from page 112	**Point Load** 4 kN in acc. with EN 1991-1 **Uniform Distributed Load** 5 kN/m² in acc. with EN 1991-1 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1 **Fire Resistance Performance of the System** F 90 from above
COVERINGS ↘from page 94	textile coverings, elastic coverings, parquet
APPLICATION AREAS	**Work:** common areas, stage and studio rooms, rooms for radio and television production, assembly rooms, office buildings **Education:** higher education institutions, schools, libraries **Recreation and Culture:** cinemas and theatres, concert halls, places of assembly, museums, shopping centres, sports halls **Health:** clinics and hospitals **Hotels and Catering:** restaurants and canteens, hotels and resorts **Public Institutions:** court and government buildings
SUSTAINABILITY ↘from page 126	Cradle to Cradle Certified® Silver, IBR test seal, FSC® certified
ACCESSORIES ↘from page 106	facings, expansion joints, electrical outlets, cavity barriers, air ventilation outlets, revision openings

FLOOR and more® sonic

DRY HOLLOW FLOOR FOR SEEPAGE VENTILATION

The FLOOR and more® sonic Dry Hollow Floor System offers sophisticated ventilation for an optimal indoor climate. It introduces fresh air that flows directly from the floor. Perforated floor panels ensure ideal air circulation. Users are unaware of the floor ventilation system, because it remains hidden beneath a seepage ventilation covering. Whether heating, cooling or ventilation – you can use these innovative floor system to create a particularly pleasant room climate and annoying draughts are now a thing of the past.

+ variable hole pattern
+ suitable for seepage ventilation coverings



TECHNICAL DATA

Panel
fibre-reinforced perforated calcium sulphate panel with tongue and grooving

Panel Thickness
40 mm

System Weight
approx. 42 kg/m²

Standard Pedestal Heights
40 - 2,000 mm

FLOOR and more® sonic

STATICS ↘from page 112	**Load Class** 2 (3 kN) - 5 (5 kN) in acc. with EN 13213 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1, A2 (non-combustible) in acc. with DIN 4102-1
CLIMATE REGULATION ↘from page 122	**Air Flow Rate at 20 Pa** 192 - 1,294 m³/h (panel without surface covering) **Free Cross section** 4 - 24 %
COVERINGS ↘from page 94	suitable loose-laid tiles
APPLICATION AREAS	**Work:** common areas, stage and studio rooms, office buildings, rooms for radio and television production, assembly rooms **Recreation and Culture:** banks, sales areas, places of assembly, museums **Education:** libraries, research rooms, higher education institutions, schools **Public Institutions:** court and government buildings **Industry:** laboratories and research, clean rooms, power plants
SUSTAINABILITY ↘from page 126	IBR test seal
ACCESSORIES ↘from page 106	facings, expansion joints, electrical outlets, cavity barriers, inspection openings, bridging profiles

HIGH-DENSITY CEMENT FIBRE PANELS

WHERE HUMIDITY IS THE ORDER OF THE DAY

Our high-density cement fibre panels are the ideal solution for highly frequented areas with increased humidity stress and for humid environments. These humidity-resistant floor panels effectively prevent water absorption. Thus they can be used in a wide variety of areas – for example, in entrance halls of public buildings and in hotels. They are also suitable for kitchen areas. Thanks to the use of pre- and post-consumer waste paper, the high-density cement fibre panels are FSC® certified and thus contribute to responsible forest management. There are numerous options regarding the choice of the coverings.

+ suitable for areas with increased humidity stress
+ highly loadable
+ non-combustible
+ mould-resistant

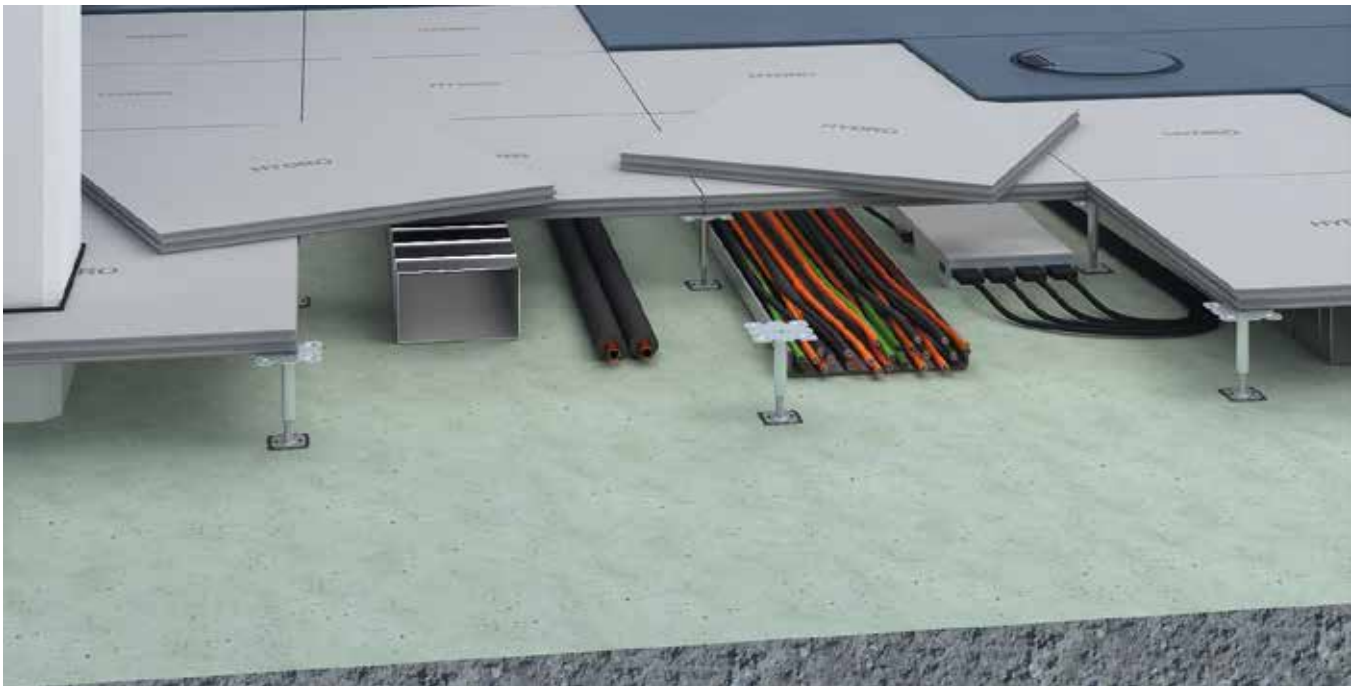
arabeska, Munich, Germany

HYDRO

DRY HOLLOW FLOORS FOR HUMID AREAS

Our HYDRO Dry Hollow Floor System was specifically developed for areas with increased humidity stress. The humidity resistant floor system consists of high-density cement fibre panels. The gluing of the floor panels is done via a special tongue and grooving at the edges of the floor panel creating a closed load bearing layer. HYDRO is then equipped with different coverings. Therefore this floor system offers the ideal solution for humid environments and areas with increased humidity stress.

+ very high load-bearing capacity
+ water-resistant
+ mould-resistant



TECHNICAL DATA

Panel
high-density cement fibre panel with tongue and grooving

Panel Thickness
40 mm

System Weight
approx. 72 kg/m²

Standard Pedestal Heights
40 - 2,000 mm

Pedestal Grid
593 x 593 mm

HYDRO

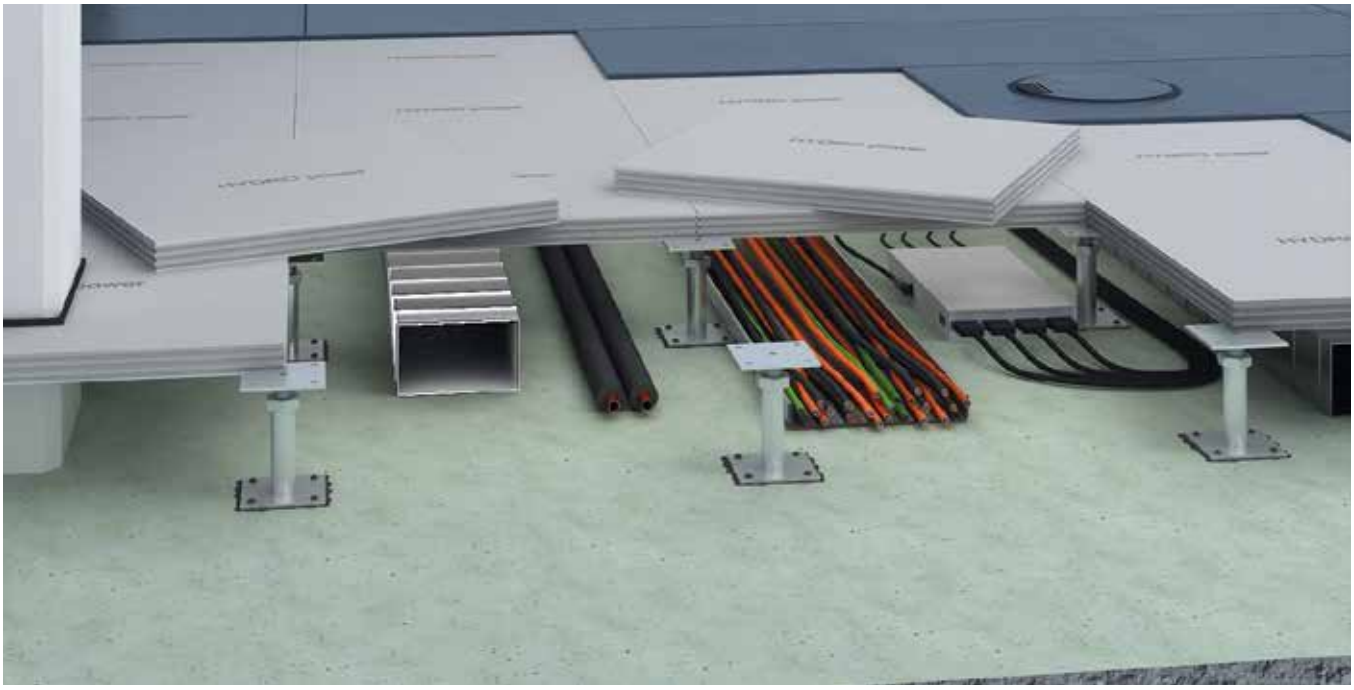
STATICS ↘from page 112	**Load Class** 5 (5 kN) - 6 (15 kN) in acc. with EN 13213 **Safety Factor** 2 **Seismic Safety** possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1 **Fire Resistance Performance of the System** REI 30 in acc. with EN 13501-2 as per classification report
ACOUSTICS ↘from page 117	**Rated Sound Reduction Index R_w** 64 dB **Reduction of Impact Sound Pressure Level ΔL_w** 14 - 15 dB
COVERINGS ↘from page 94	elastic coverings, stone and ceramic coverings, decorative or technical coating systems
APPLICATION AREAS	**Work:** common areas **Education:** research rooms, higher education institutions, schools **Recreation and Culture:** shopping centres, public swimming pools, sales areas **Hotels and Catering:** commercial kitchens, restaurants and canteens, hotels and resorts **Industry:** power plants, production facilities **Public Institutions:** government and court buildings **Transport:** underground/tunnels, train stations, airports **Public Areas:** entrance areas, necessary corridors
SUSTAINABILITY ↘from page 126	FSC® certified
ACCESSORIES ↘from page 106	facings, floor drains, expansion joints, cavity barriers, inspection openings, bridging profiles

HYDRO power

DRY HOLLOW FLOOR FOR HUMID/HEAVY-DUTY AREAS

Our HYDRO power Dry Hollow Floor System was specifically developed for heavy-duty areas and surfaces with increased humidity stress. This humidity-resistant flooring system includes high-density cement fibre panels with an optimised panel mixture. The HYDRO power panels are bonded by means of special dovetailing at the edges of the panels, which creates a closed base layer. The substructure of height-adjustable, zinc-coated steel pedestals from our own production provides the necessary cavity for your installations.

+ very high load-bearing capacity
+ water-resistant
+ resistant to mould and mildew
+ suitable for heavy-duty areas



TECHNICAL DATA

Panel
high-density cement fibre panel with tongue and grooving, optionally with galvanised steel sheet at bottom side

Panel Thickness
40.5 - 44.5 mm

System Weight
75 - 85 kg/m²

Standard Pedestal Heights
57 - 2,000 mm

Pedestal Grid
593 x 593 mm

HYDRO power

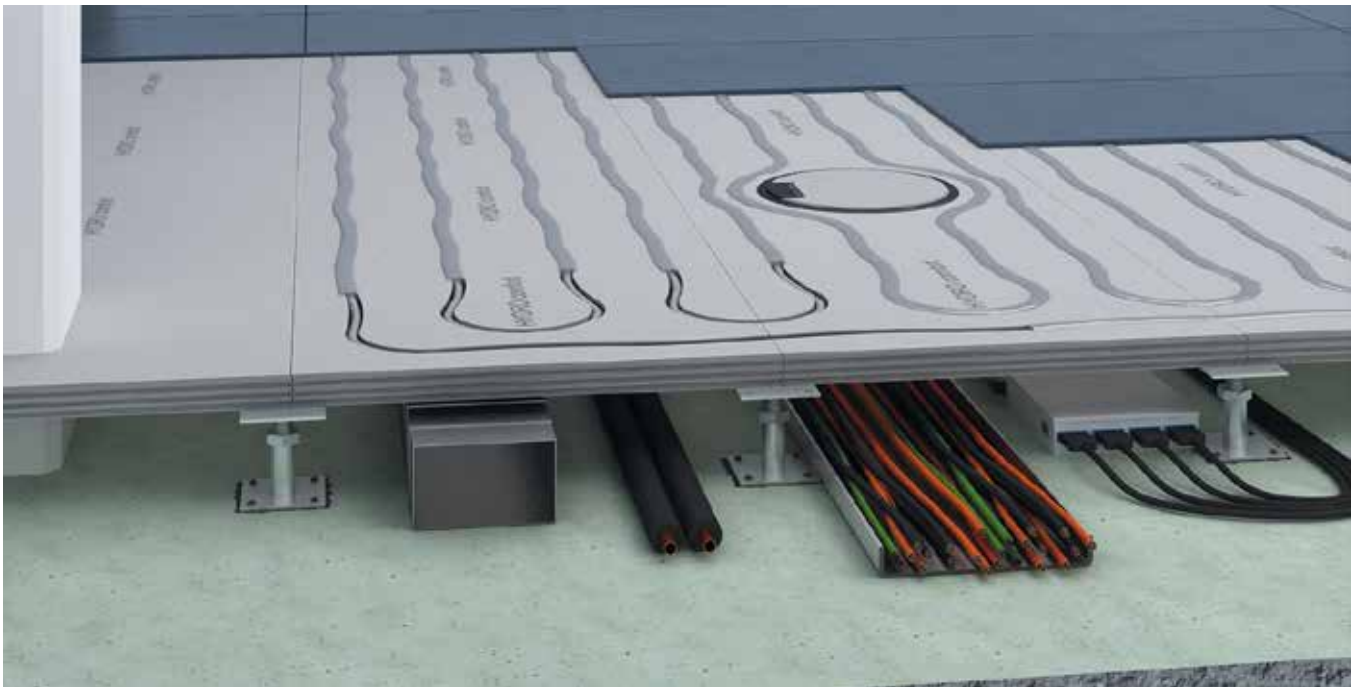
STATICS ↘from page 112	**Load Class** 5 (5 kN) - 6 (15 kN) in acc. with EN 13213 **Safety Factor** 2 **Seismic Safety** earthquake-proof version possible, possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1 **Fire Resistance Performance of the System** REI 30 in acc. with EN 13501-2 as per classification report
ACOUSTICS ↘from page 117	**Rated Sound Reduction Index R_w** 64 dB **Reduction of Impact Sound Pressure Level ΔL_w** 15 dB
COVERINGS ↘from page 94	elastic coverings, engineered stone and ceramic coverings, decorative or technical coating systems
APPLICATION AREAS	**Education:** research rooms, higher education institutions, schools **Recreation and Culture:** shopping centres, public swimming pools, sales areas **Hotels and Catering:** commercial kitchens, restaurants and canteens, hotels and resorts **Industry:** power plants, production facilities **Public Institutions:** government and court buildings **Transport:** underground/tunnels, train stations, airports **Public Areas:** entrance areas
SUSTAINABILITY ↘from page 126	FSC® certified
ACCESSORIES ↘from page 106	facings, floor drains, expansion joints, cavity barriers, inspection openings, bridging profiles

HYDRO comfort

DRY HOLLOW FLOOR FOR HUMID AREAS WITH UNDERFLOOR HEATING

Our HYDRO comfort Dry Hollow Floor System was specifically developed for areas with increased humidity ingress and creates a pleasant indoor climate due to its intelligent heating and cooling system. This humidity-resistant flooring system includes high-density cement fibre panels. Pre-milled grooves on the top for taking up the heating and cooling lines are sealed with filling compound after installation. The HYDRO panels are bonded by means of a special tongue and grooving at the edges of the panels, which creates a closed base layer. The substructure of height-adjustable, zinc-coated steel pedestals from our own production provides the necessary cavity for your installations.

+ quick reaction period with heating and cooling
+ water-resistant
+ resistant to mould and mildew
+ environmental-friendly due to low flow temperature



TECHNICAL DATA

Panel
high-density cement fibre panel with tongue and grooving, milled grooves on top

Panel Thickness
40 - 44.5 mm

System Weight
80 - 85 kg/m²

Standard Pedestal Heights
76 - 2,000 mm

Pedestal Grid
593 x 593 mm

HYDRO comfort

STATICS ↘ from page 112	**Load Class** 3 (5 kN) - 6 (15 kN) in acc. with EN 13213 **Safety Factor** 2 **Seismic Safety** earthquake-proof construction possible, possible in A - F in acc. with IBC (International Building Code)
FIRE PROTECTION ↘ from page 116	**Reaction to Fire Performane of the Carrier Panel** A1 (non-combustible) in acc. with EN 13501-1
ACOUSTICS ↘ from page 117	**Rated Sound Reduction Index R_w** 64 dB **Reduction of Impact Sound Pressure Level ΔL_w** 15 dB
CLIMATE REGULATION ↘ from page 122	**Heating Performance** 60 - 100 W/m² in acc. with DIN EN 1264-2 **Cooling Performance** 23 - 41 W/m² in acc. with DIN EN 1264-5 **Heating Line** Ø 17 mm
COVERINGS ↘ from page 94	engineered stone and ceramic coverings, natural stone, decorative or technical coating systems (suitability for underfloor heating required)
APPLICATION AREAS	**Education:** research rooms, higher education institutions, schools **Recreation and Culture:** shopping centres, public swimming pools, sales areas **Hotels and Catering:** commercial kitchens, restaurants and canteens, hotels and resorts **Public Institutions:** government and court buildings **Transport:** train stations, airports **Public Areas:** entrance areas
SUSTAINABILITY ↘ from page 126	FSC® certified
ACCESSORIES ↘ from page 106	facings, floor drains, expansion joints, cavity barriers, inspection openings, bridging profiles

SUBSTRUCTURE
SUPPORT FROM BELOW

Our floor systems have a particular advantage: they do not require any additional structures. Almost all system components – such as raised floor pedestals, profiles and switchboard frames – are produced internally at Lindner. Such substructures then serve as highly loadable pedestals for the system or as additional option for the accommodation and arrangement of cables and supply lines. In-house production enables us to assure consistently high quality and creates the possibility to respond to individual requirements – just as you wish.

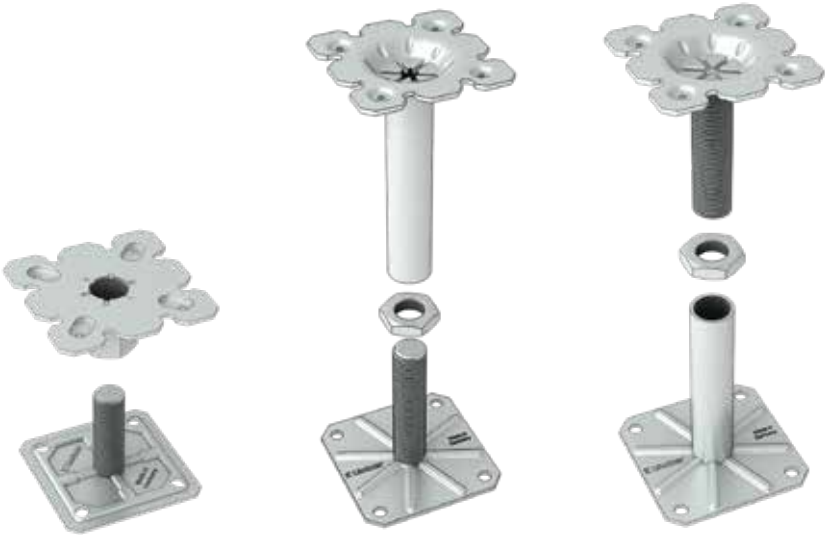
+ interface optimisation due to in-house production of system components
+ high quality
+ very high loads possible
+ made in Germany

SUBSTRUCTURE

RAISED FLOOR PEDESTALS

We use raised floor pedestals made of galvanised steel as substructure for our raised floor systems – in combination with gaskets and optionally with stringers type RO, RL and RM. The floor pedestals create a cavity for taking up supply lines. They are entirely made by Lindner, from the design to the production including the galvanisation. The high load-bearing capacity and large adjustment range of our raised floor pedestals also offer exceptional flexibility. The pedestals are infinitely adjustable to height and therefore take up irregularities of the subfloor.

+ pedestal heights from 25 - 2,000 mm
+ easy installation
+ galvanised and blue passivated
+ made in Germany
+ manufacturing process chrome (VI)-free

PEDESTAL TYPE	SCHEMATIC REPRESENTATION	STATICS
M		**Load Class** 2 in acc. with EN 12825 **Point Load** 3 kN
H		**Load Class** 5 in acc. with EN 12825 **Point Load** 5 kN

PEDESTAL TYPE	SCHEMATIC REPRESENTATION	STATICS
S		**Load Class** 6 in acc. with EN 12825 **Point Load** 6 kN
E		**Load Class** 6 in acc. with EN 12825 **Point Load** 8 kN
T		**Load Class** 6 in acc. with EN 12825 **Point Load** 10 kN

CONTROL ROOM PEDESTALS

We offer control room pedestals made of galvanised and blue passivated steel as substructure for our raised floor systems – in combination with reinforcement profile types CL, CS, CX, CM and CH. The floor pedestals create the cavity for taking up supply lines. They are entirely made by Lindner, from the design to the production including the galvanisation. The high load-bearing capacity and large adjustment range of our control room pedestals also offer exceptional flexibility. The pedestals are infinitely adjustable to height and therefore take up irregularities of the subfloor.

+ unique flexibility
+ high load-bearing capacity
+ easy installation
+ pedestal heights up to 2,000 mm and beyond
+ "zinc-whisker" free

PEDESTAL TYPE	SCHEMATIC REPRESENTATION	STATICS
SW 90		**Load Class** 5 in acc. with EN 12825 **Point Load** 5 kN
SWU		**Load Class** 5 in acc. with EN 12825 **Point Load** 5 kN

PEDESTAL TYPE	SCHEMATIC REPRESENTATION	STATICS
SW 120	 	**Load Class** 5 in acc. with EN 12825 **Point Load** 5 kN
SWM 120	 	**Load Class** 6 in acc. with EN 12825 **Point Load** 10 kN
SWH 120	 	**Load Class** 6 in acc. with EN 12825 **Point Load** 15 kN

HOLLOW FLOOR PEDESTALS

We use hollow floor pedestals made of galvanised steel as substructure for our hollow floor systems. The floor pedestals create the cavity for taking up supply lines. They are entirely made by Lindner, from the design to the production including the galvanisation. The high load-bearing capacity and large adjustment range of our hollow floor pedestals also offer exceptional flexibility. The pedestals are infinitely adjustable to height and therefore take up irregularities of the subfloor.

+ pedestal heights from 25 mm up to 2,000 mm
+ high load-bearing capacity
+ galvanised and blue passivated
+ made in Germany
+ manufacturing process chrome(VI)-free

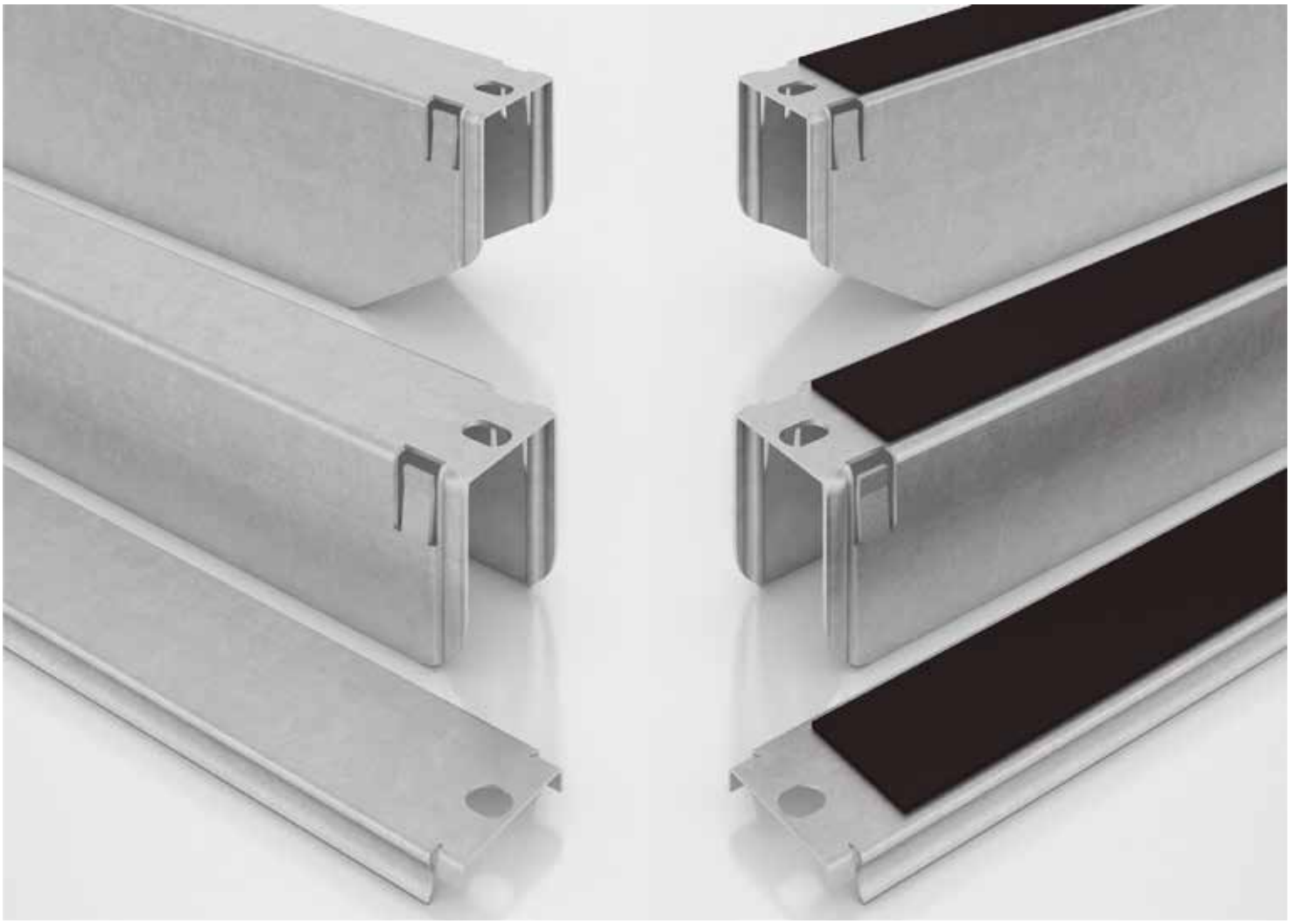
PEDESTAL TYPE	SCHEMATIC REPRESENTATION	STATICS
L		**Load Class** 5 in acc. with EN 13213 **Point Load** 5 kN

PEDESTAL TYPE	SCHEMATIC REPRESENTATION	STATICS
PM		**Load Class** 6 in acc. with EN 13213 **Point Load** 10 kN
PH		**Load Class** 6 in acc. with EN 13213 **Point Load** 15 kN
P		**Load Class** 6 in acc. with EN 13213 **Point Load** 20 kN

REINFORCEMENT PROFILES

STRINGERS

Standard Lindner Floor Systems already exhibit high load-bearing capacities. Should these still not be sufficient, the system can be upgraded by reinforcement profiles. Various options are possible, from the lightest stringer which increases lateral rigidity through to a C-profile.

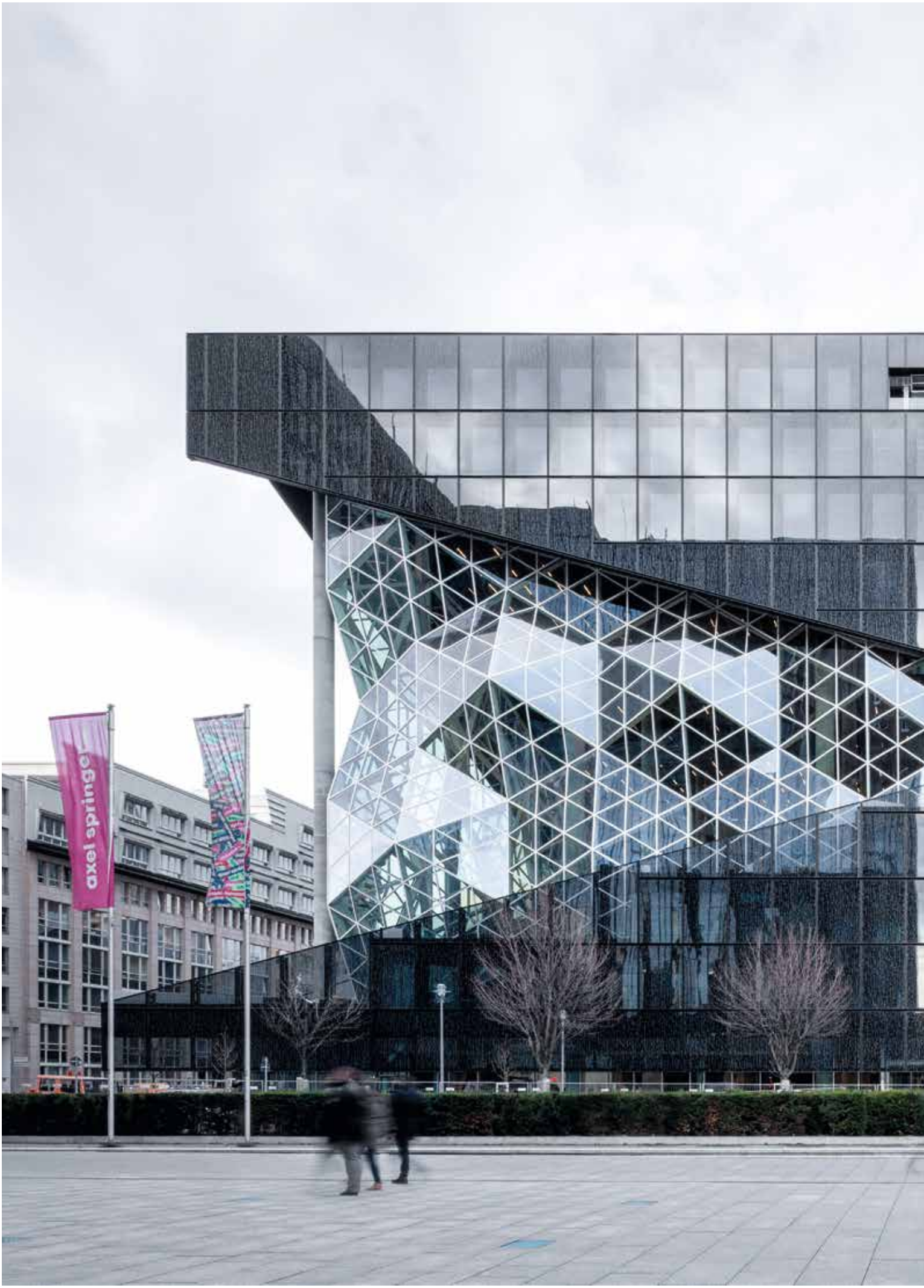


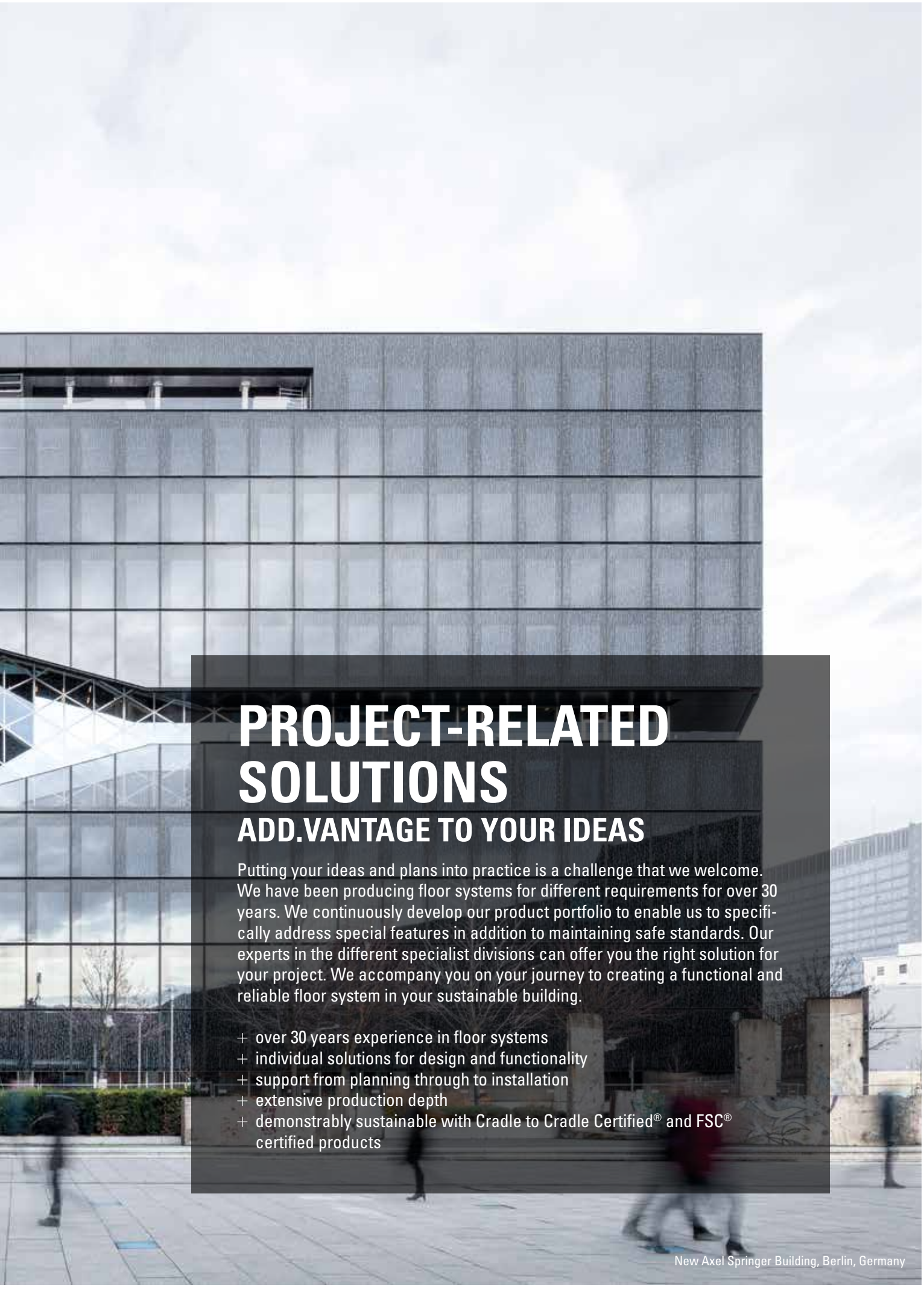
Type RM (height: 54 mm) **Type RL** (height: 35 mm)	Stringers type RM (medium) and type RL (light) are made of cold-bent galvanised steel sheet. Springs are machined laterally at the ends of the stringers. These are inserted by pressing them vertically into the pedestals from above (optional screw fixing). Stringers type RL and RM provide horizontal and vertical reinforcement to the system.
Type RO (height: 7.5 mm)	Stringer type RO is made of cold-bent galvanised steel sheet and has a clipping function. This function (optional screw fixing) creates a tight fit on the pedestal head – this prevents metallic rattling. This stringer only provides horizontal reinforcement to the system.

CONTROL ROOM PROFILES

Our control room profiles are made of cold-bent galvanised steel sheet and are used in control room constructions. The profiles are connected with a hammer head bolt from the bottom side. Their different dimensions can be used to achieve a significant increase in load capacity.

TYPE	PROFILE DIMENSIONS	SCHEMATIC REPRESENTATION
CL	40 x 41 mm	
CS	40 x 41 mm	
CX	40 x 41 mm	
CM	40 x 84 mm	
CH	40 x 126 mm	


axel springer



PROJECT-RELATED SOLUTIONS

ADD.VANTAGE TO YOUR IDEAS

Putting your ideas and plans into practice is a challenge that we welcome. We have been producing floor systems for different requirements for over 30 years. We continuously develop our product portfolio to enable us to specifically address special features in addition to maintaining safe standards. Our experts in the different specialist divisions can offer you the right solution for your project. We accompany you on your journey to creating a functional and reliable floor system in your sustainable building.

+ over 30 years experience in floor systems
+ individual solutions for design and functionality
+ support from planning through to installation
+ extensive production depth
+ demonstrably sustainable with Cradle to Cradle Certified® and FSC® certified products

New Axel Springer Building, Berlin, Germany

↘ MUSÉE DE L´HOMME, PARIS, FRANCE

The Musée de l´Homme in Paris is located in the south-western wing of the Palais de Chaillot, which was built for the World Expo in 1937. A six-year refurbishment there saw an exhibition area of around 2,850 m² being created using FLOOR and more® and ultimately being covered in solid wood parquet (natural oak). There is also 900 m² of NORTEC in the temporary exhibition area. Floor cables and other technical installations can now be easily laid and connected to display cases during alternating exhibitions.

FLOOR and more® ↘ from page 54

Musée de l´Homme, Paris, France
© Patrick Tournebœuf

↘ SIEMENS, BEIJING, CHINA

China is the second largest overseas market for Siemens. Our Lindner NORTEC Raised Floor System with a specially reinforced substructure and perforated floor panels for optimum air distribution was laid in the data centre at the group's Chinese headquarters in Beijing. This enables server racks and other equipment to be ventilated from below to prevent overheating. Trapezoidal metal ceilings give a certain sophistication to all of the offices in the building.

NORTEC power ↘ from page 18

Siemens, Beijing, China

↘ BLOX, COPENHAGEN, DENMARK

Covering an area of 28,000 m², BLOX houses the Danish Architecture Centre (DAC) and numerous other office and exhibition areas, catering, retail outlets, private apartments and an automated underground car park. Lindner contributed significantly to the interior fit-out in BLOX, including the installation of raised and hollow floor systems. The NORTEC Raised Floor System was partly executed with (oak) parquet applied at the factory and partly with carpet laid at site by the customer. HYDRO is installed in the private apartments within BLOX.

NORTEC ↘ from page 16

BLOX, Copenhagen, Denmark

↘ ARABESKA – TRAINING AND CONFERENCE CENTRE, MUNICH, GERMANY

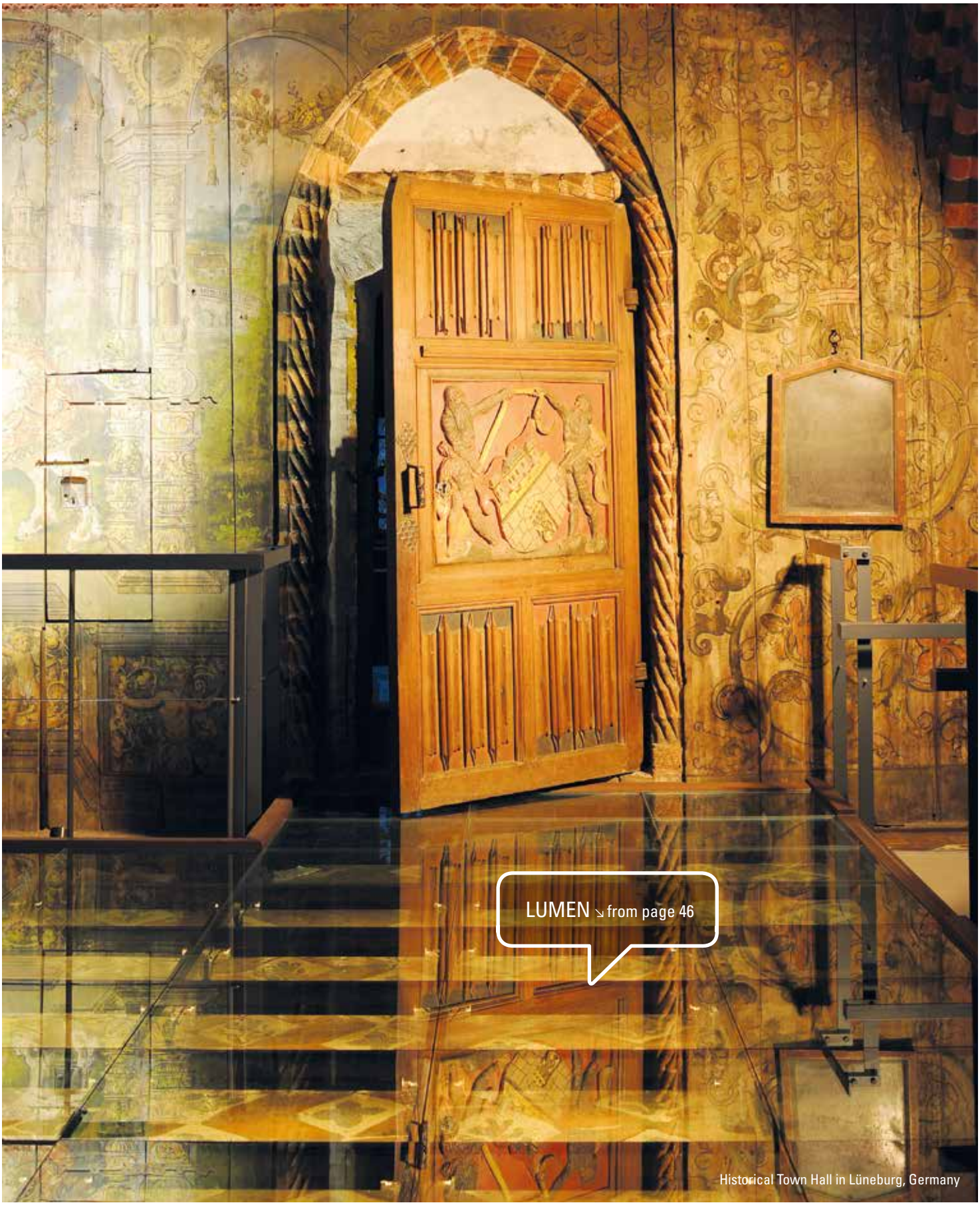
The new "arabeska" building features light-flooded grandeur and borrowings from the ornamentation of Arabic architecture. In line with the overall impression of high quality, NORTEC Raised Floors with large sized ceramic tiles (1.2 x 1.2 m) which were chosen and laid in the innovative Lindner DryMode installation procedure. This requires neither a primer nor adhesive, so installation is substantially faster and cleaner. The system can be fully dismantled without damaging the underlying building fabric.

DryMode ↘ from page 104

arabeska – Training and Conference Centre, Munich, Germany

↘ HISTORICAL TOWN HALL IN LÜNEBURG, GERMANY

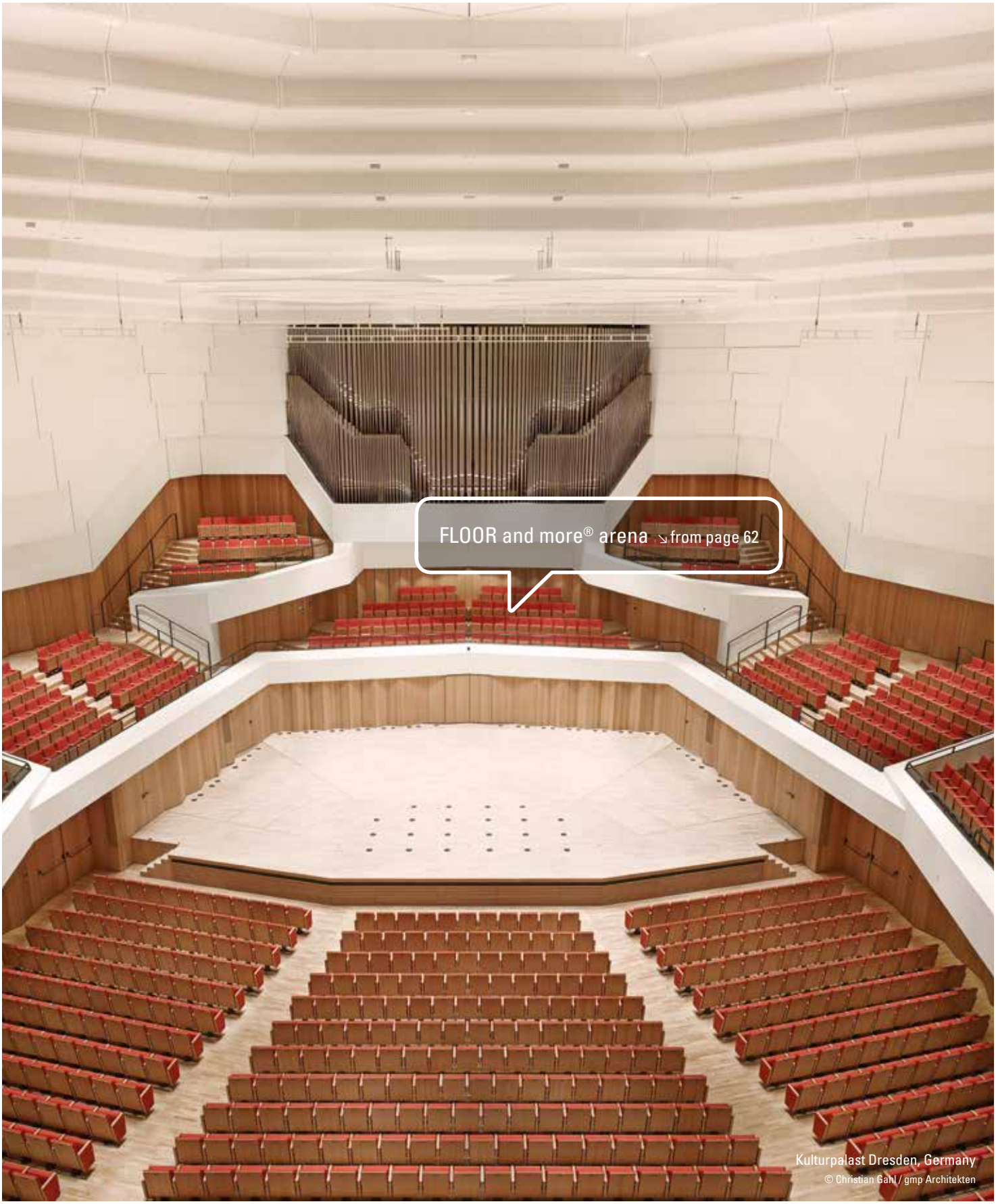
The historical town hall in Lüneburg is a rarity: the original building stems from around 1230 and was extended again and again over the course of many centuries. It is therefore now a combination of many different stylistic eras. The town hall did not sustain any war damage, so it is in very good condition and is a listed building. The glass panels of the LUMEN Raised Floor System protect the original floor. The result is that it is accessible and can be observed, but without sustaining any damage.



Historical Town Hall in Lüneburg, Germany

↘ KULTURPALAST, DRESDEN, GERMANY

As from 1969, the Kulturpalast in Dresden was one of the most significant cultural sites in the GDR. It continued to be seen as an important venue even after reunification. After 40 years of use, the "Kulti" closed in 2012 for an extensive refurbishment. Lindner realised the interior fit-out plus overall coordination of all trades, including the technical building services/stage technology in the concert hall and cabaret hall as well as renewal of the listed Mogi ceiling in the foyer. FLOOR and more® arena was selected as the flooring system.



Kulturpalast Dresden, Germany
© Christian Gahl / gmp Architekten

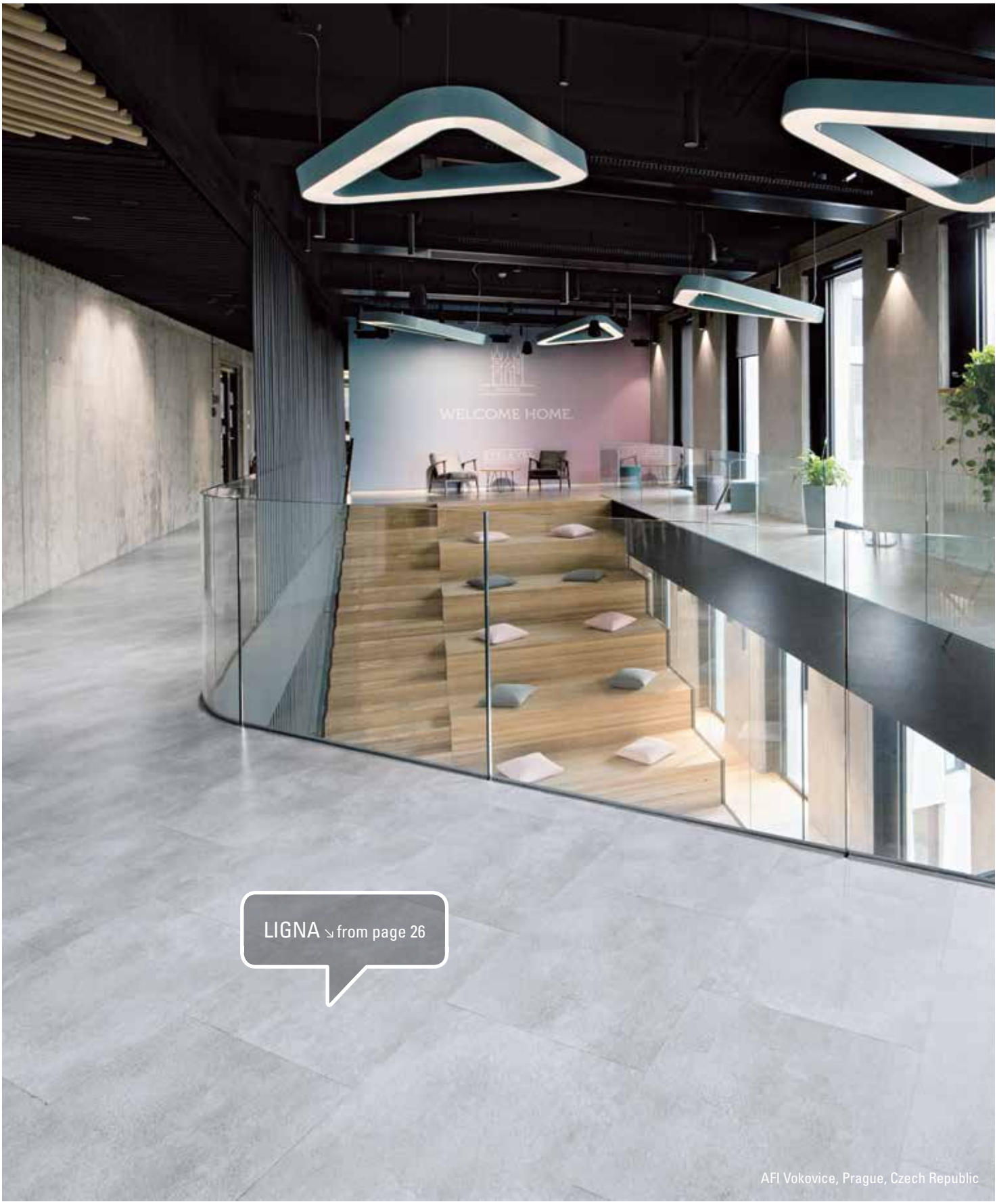
↘ HOUSE OF FLAMES, MUNICH, GERMANY

The “House of Flames“ is considered to be one of the best known addresses for Harley Davidson fans in Germany. The focus in the new “House of Flames“ shop that recently opened in Munich was slightly different – lifestyle: the heavy machines are now presented in the shop's showroom standing on the NORTEC Raised Floor System with its smoked oak WOODline Parquet Covering in an oiled industrial design. The combination of the raised floor system's high load-bearing, fibre-reinforced calcium sulphate panels and the attractive surface covering provides an ideal link between function and design. Warm parquet supports the US flair and its robust qualities easily withstand the high demands.

House of Flames, Munich, Germany

↘ AFI VOKOVICE, PRAGUE, CZECH REPUBLIC

The administrative complex was built according to plans by the architectural office DAM Architekten and consists of two buildings with six, respectively eight storeys. In addition to the office space, there is also space for retail and storage. The property is in an extremely attractive location in the immediate vicinity of the city centre and the international airport. Lindner equipped the complex with 15,500 m² of the LIGNA Raised Floor System. Thanks to its energy-efficient design, the building received the LEED Platinum certification.



LIGNA ↘ from page 26

AFI Vokovice, Prague, Czech Republic

COVERINGS
A STYLISH FINISH FOR FLOOR SYSTEMS

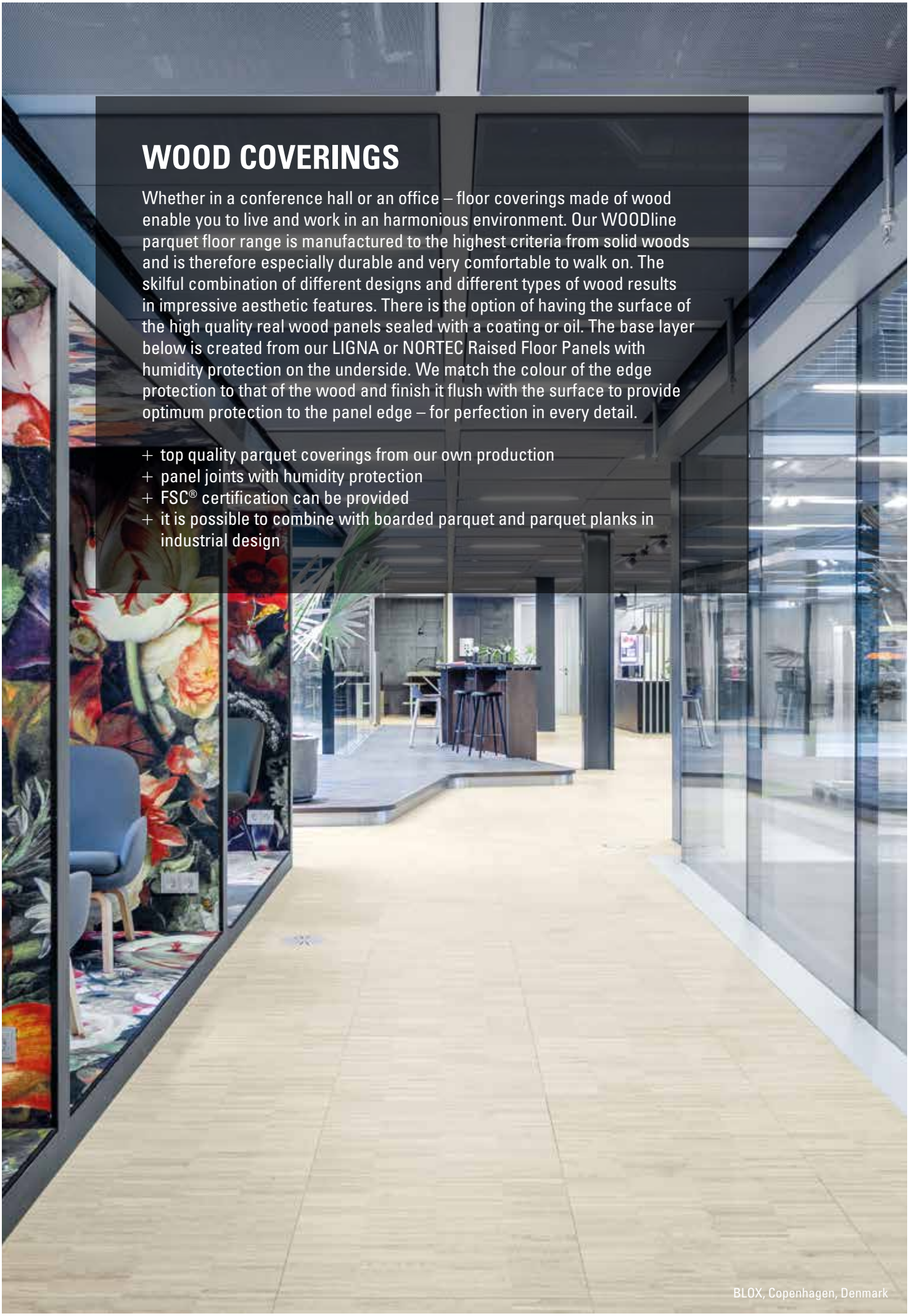
The majority of Lindner Floor Systems are supplied with a covering as a finish. Application at the factory using tested and emission-free adhesive systems ensures durability and top quality.
All commonly available floor coverings are generally possible. The selection includes materials like rubber, PVC, HPL, or carpet. In addition to these standard coverings, we also offer the STONEline and WOODline series. The latter enables a wide variety of different design options thanks to the large choice of parquet coverings.

+ resistant and of exceptionally high quality
+ factory application using emission-free adhesive systems
+ various materials available

PEC Professional Education Centre Schieder, Germany

COVERINGS

Munich Airport, Terminal 2, Germany
© Flughafen München



WOOD COVERINGS

Whether in a conference hall or an office – floor coverings made of wood enable you to live and work in an harmonious environment. Our WOODline parquet floor range is manufactured to the highest criteria from solid woods and is therefore especially durable and very comfortable to walk on. The skilful combination of different designs and different types of wood results in impressive aesthetic features. There is the option of having the surface of the high quality real wood panels sealed with a coating or oil. The base layer below is created from our LIGNA or NORTEC Raised Floor Panels with humidity protection on the underside. We match the colour of the edge protection to that of the wood and finish it flush with the surface to provide optimum protection to the panel edge – for perfection in every detail.

+ top quality parquet coverings from our own production
+ panel joints with humidity protection
+ FSC® certification can be provided
+ it is possible to combine with boarded parquet and parquet planks in industrial design

BLOX, Copenhagen, Denmark

WOODLINE

WOOD TYPES

Lindner offers a wide selection of different woods: discover for instance the timeless elegance of sturdy oak, with its warm tones and distinctive grain. Our most popular flooring woods with the best ecological properties also include classy, dark walnut or natural bamboo. We can supply brushed, smoked or steamed surfaces on request. FSC® certification can also be provided. Whatever your vision may be – we offer the appropriate implementation.

STANDARD WOODS

Oak 	Smoked Oak 	Walnut 
Bamboo 	Steamed Bamboo 	

SURFACES

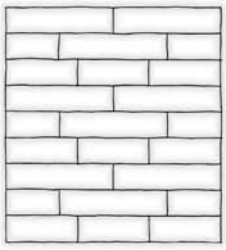
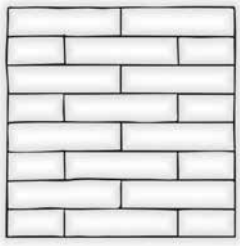
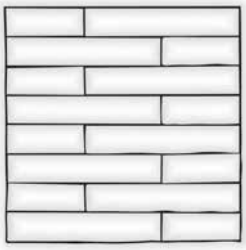
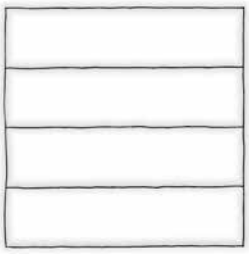
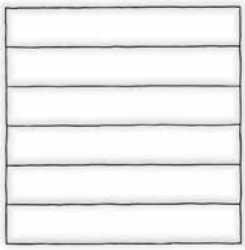
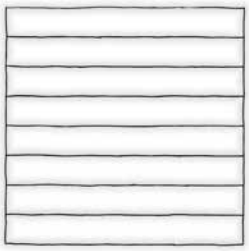
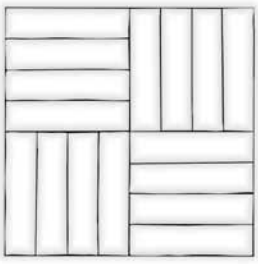
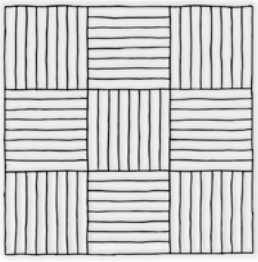
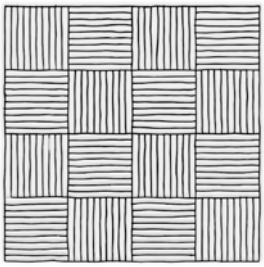
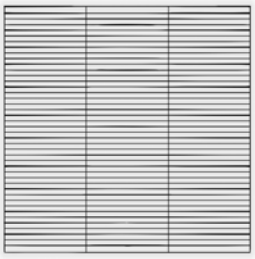
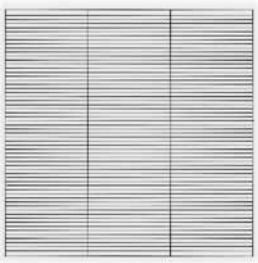
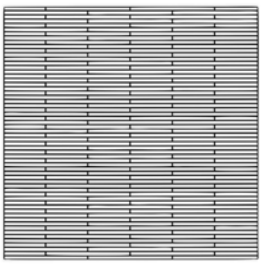
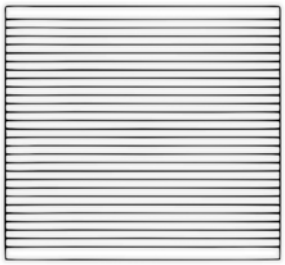
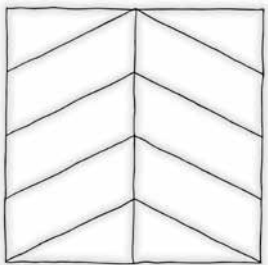
Whether lacquered or oiled, we can realise every type of surface application for you. A five-layer lacquer surface meets the highest requirements in terms of floor lacquers. Its tested emission values are well below the internationally stipulated limits.
The matt gloss level of oiled woods, on the other hand, highlights the naturalness of this material. Our hard-wearing oxidative oils are available in natural, white, extra white, grey and brown.

	Lacquered	**Oiled**
Structure	5-layer, UV-cured lacquer structure	2-layer, oxidatively-cured oil structure
Versions	lacquered, clear lacquered, neutral (not brightening) lacquered in colour (white, grey, brown)	oiled, clear oiled in colour (white, extra white, grey, brown)
Gloss Level	matt	silk-matt
Slip Prevention Class	R10	R10
Wear Resistance	IHD specifications – class 6	–
Care Instructions	–	initial maintenance provided by the customer
Emission Testing	Indoor Air Comfort Gold®, M1	Indoor Air Comfort Gold®, M1
Fire Behaviour	C_{fl}-s1	–

The lacquer application can be realised in matt or gloss, transparent or in the colour tones brown, grey or white.

DESIGNS

Whatever you need, our parquet designs open up a wide horizon of design options: would you prefer a rediscovered classic that satisfies modern quality standards? Tried and tested floorboards for demanding solutions – or even the latest trend? We are sure we can supply what you are looking for.

3-strip 9 	3-strip 8 	2-strip 	Large baton 4 
Large baton 6 	Large baton 8 	Mosaic 4 	Mosaic 9 
Mosaic 16 	Industrial 3 - 18 	Industrial 3 - 14 	Industrial 3 - 10 
Industrial 4 - 10 	FineLine (bamboo) 	Large baton (bamboo) 	Herringbone 

COMBINATION OPTIONS

Our WOODline floor coverings allow you maximum design freedom. The boarded parquet elements and finished parquet planks enable you to achieve a combination of conventional screed and dry screed surfaces with Lindner Floor Systems, while maintaining the same appearance. The transition from a screed surface with boarded parquet elements and finished parquet planks to a raised floor surface with WOODline is therefore indiscernible. WOODline can also be supplied with FSC® certification on request.

+ top quality boarded parquet and parquet planks from our own production
+ can be combined with our raised floors
+ FSC® certification can be provided

BOARDED PARQUET ELEMENT

Our three-layer boarded parquet measuring 600 x 600 x 15 mm has a surrounding groove for laying in bond on conventional screed or dry screed surfaces. The design of the finished boarded parquet panel can be adapted to the variants of all top layers.
There is the option of combining our FLOOR and more® flooring system with the boarded parquet, while maintaining the same appearance.

FINISHED PARQUET PLANK

This industrial plank measuring 1,200 x 200 x 15 mm matches our raised floor parquet in design Industrial 4 - 10, 3 - 10, 3 - 14 and 3 - 18. The finished parquet floorboard features a three-layer structure and milled tongue and groove for laying. The surface is lacquered, but can also be supplied as an oiled version.

STONE COVERINGS

In entrance halls, reception areas and even offices – stone coverings cut a good figure in the most diverse areas: our STONEline product range signifies ceramics that have been applied onto our calcium sulphate panels. The easy-care and hard-wearing tiles can be realised in different visual effects: as imitation of natural stone, polished, flamed, brushed and many more. Ceramics enable maximum design freedom. We can also machine natural stone on request.
STONEline can be combined with NORTEC comfort to create an ideal feel-good climate in your interior. Floor surfaces with 100 % fit accuracy in the joints can be produced when finishing using our NORTEC panels with stone. This prevents stone edges from chipping during subsequent opening and closing of the raised floor, to conduct inspections or alterations in the floor cavity, for example. We attach a colour-coordinated edging strip flush with the panel surface and chamfer it to protect the stone edge.

+ dirt-repellent due to its low water absorption of 0.5 %
+ anti-slip classes from R9 to R11
+ application and formatting to tenths of a millimetre
+ edge protection
+ different visual effects, such as wood effect, as imitation natural stone and many more

PEC Professional Education Centre Schieder, Germany

STONELINE

CERAMIC FINISHES

We supply different types of surfaces matching the room design and use depending on load type. An extensive and differentiated product range enables us to meet the diverse requirements of aesthetics and functionality. Countless combinations of colours, sizes and patterns create the prerequisite for individual projects in acc. with your wishes.

Imola | Creative concrete: https://imolaceramica.com/en/collections/creative-concrete
Casalgrande Padana | ECO concrete: https://www.casalgrandepadana.com/en/product/econcrete/
Casalgrande Padana | Resina: https://www.casalgrandepadana.com/en/product/resina/
Ceramiche Keope | Moov: https://www.keope.com/en/collections/urban-style-concrete-stoneware-moov

Imola | Creative concrete | 594 x 594 mm

BG	DG	GR	NE	WH
				

Casalgrande Padana | ECO concrete | 600 x 600 mm

White	Beige	Ash	Grey	Anthracite
				

Casalgrande Padana | Resina | 1188 x 594 mm

White	Grey	Tobacco	Havana	Black
				

Ceramiche Keope | Moov | 1200 x 600 mm

Grey	Anthracite	Mocha	Beige	Ivory
				

CEMENT-BASED COATINGS

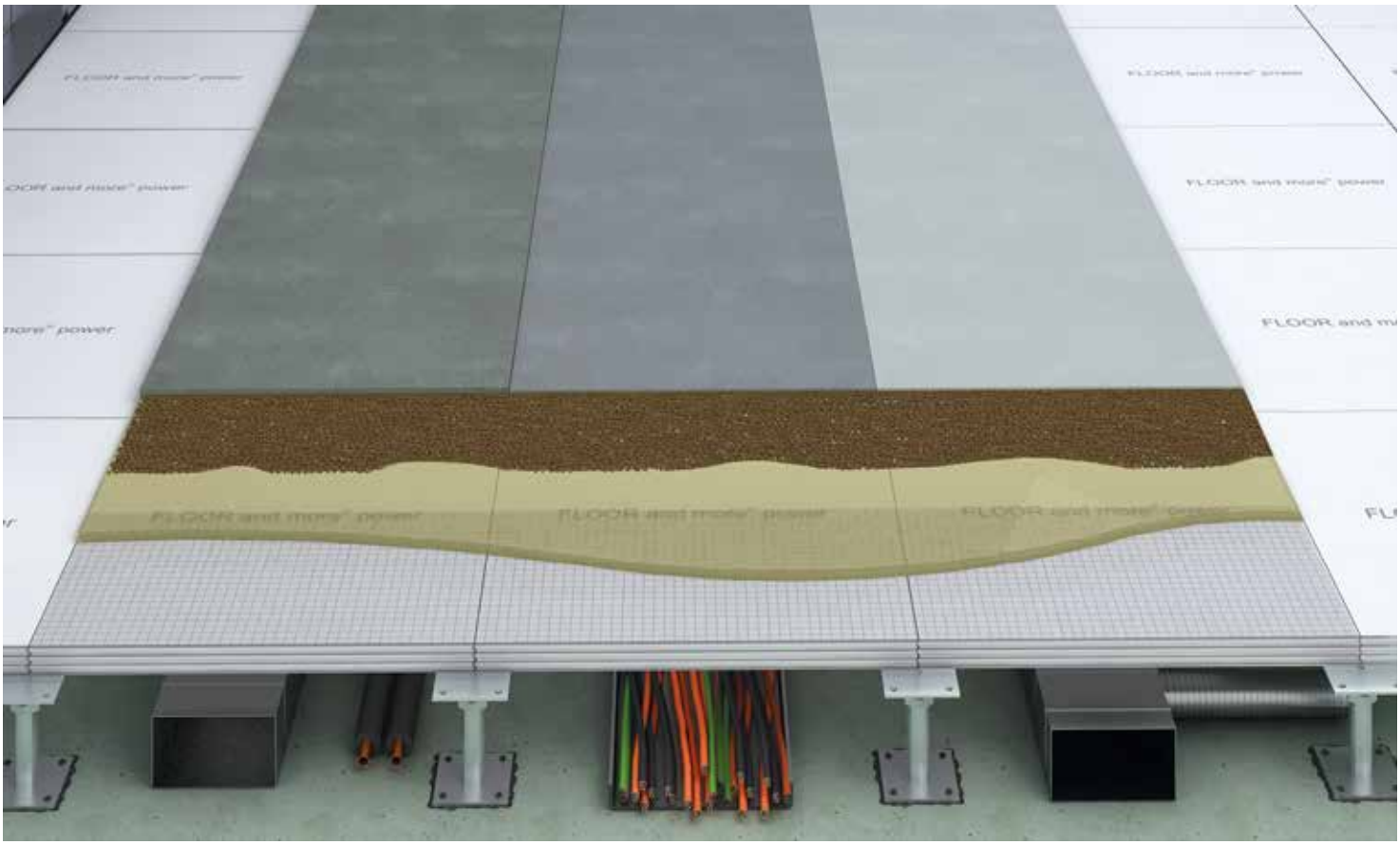
There are no limits to even the highest design standards when you use cement-based coatings. These coatings are especially suitable for large jointless surfaces. Combination with our FLOOR and more® and HYDRO hollow floor systems enables ideal solutions for the use of hollow floors to add the visual effect and the decorative quality of the surface. Hygiene requirements in clean rooms, commercial kitchens and laboratories can be optimally taken into account in this combination.

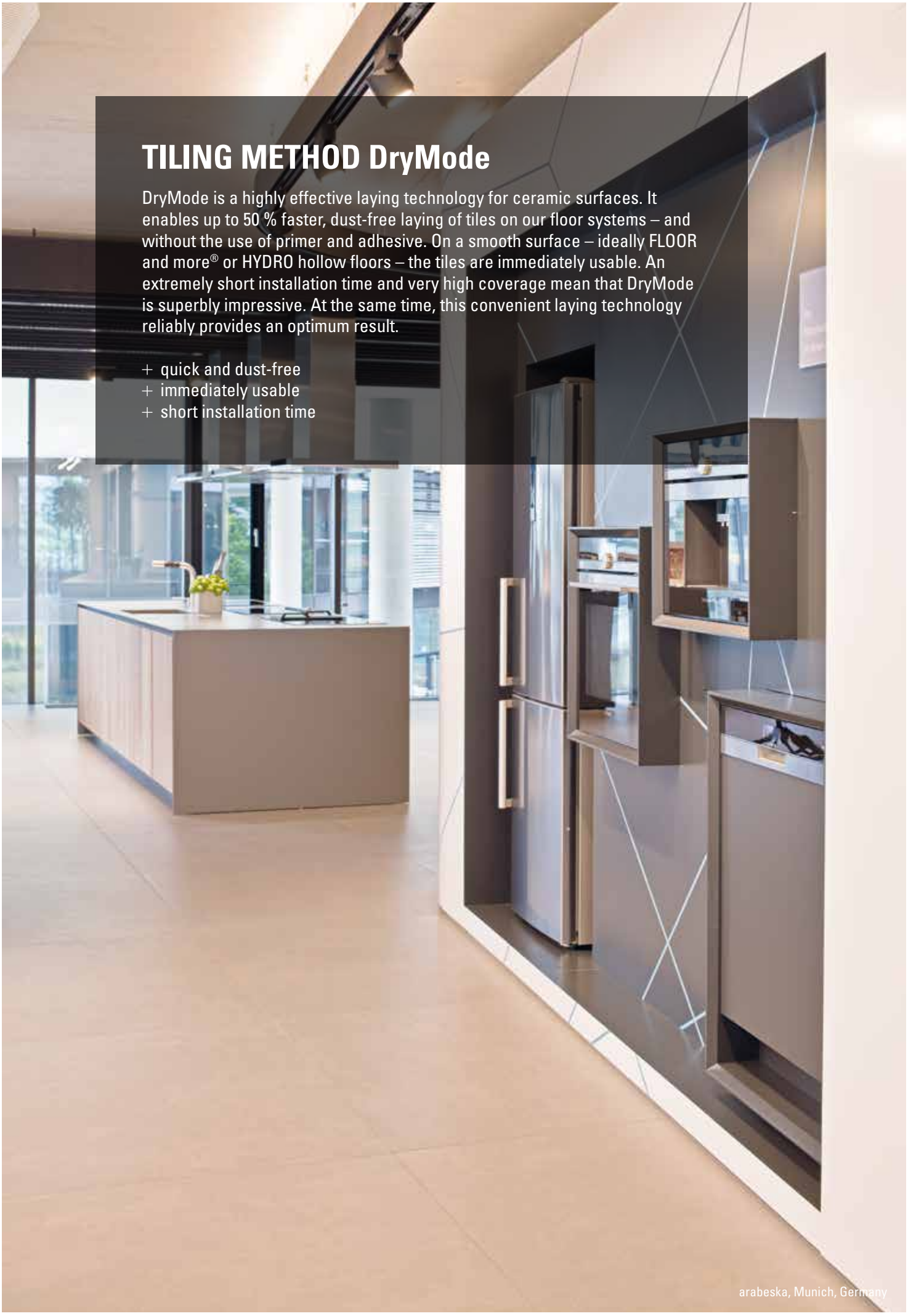
+ jointless surface
+ tried and tested structure
+ creative and individual
+ elegant and extremely durable surface

Reinhard Bär Restaurant and Café, Berlin, Germany

PANDOMO®

Using Lindner FLOOR and more® and ARDEX PANDOMO® enables two extremely successful systems to enter into a symbiosis: the floor levelling compounds from PANDOMO® can be combined with our FLOOR and more® products.
The structure of our technically-based cavity floor is thus combined with exceptional quality and great walking comfort. You do not have to make any compromises when it comes to strength and load-bearing capacity in the peak load range. The durable and lasting bond between our systems creates a minimalist, jointless appearance. A wide range of design options enables them to be used in a modern new building as well as in an old industrial building. All PANDOMO® products are based on mineral raw materials; they are sustainable, eco-friendly and certified under EMICODE® EC1.





TILING METHOD DryMode

DryMode is a highly effective laying technology for ceramic surfaces. It enables up to 50 % faster, dust-free laying of tiles on our floor systems – and without the use of primer and adhesive. On a smooth surface – ideally FLOOR and more® or HYDRO hollow floors – the tiles are immediately usable. An extremely short installation time and very high coverage mean that DryMode is superbly impressive. At the same time, this convenient laying technology reliably provides an optimum result.

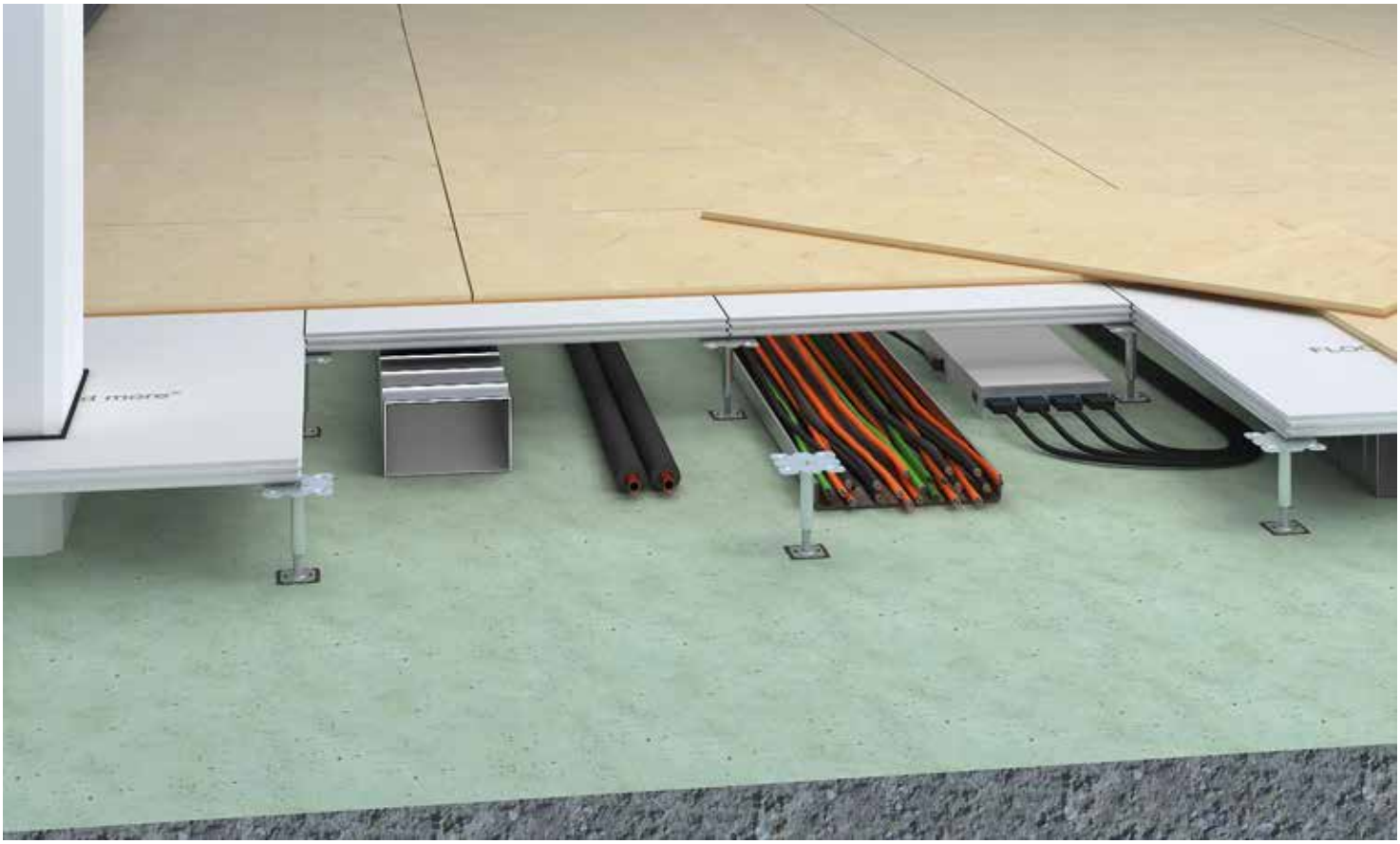
+ quick and dust-free
+ immediately usable
+ short installation time

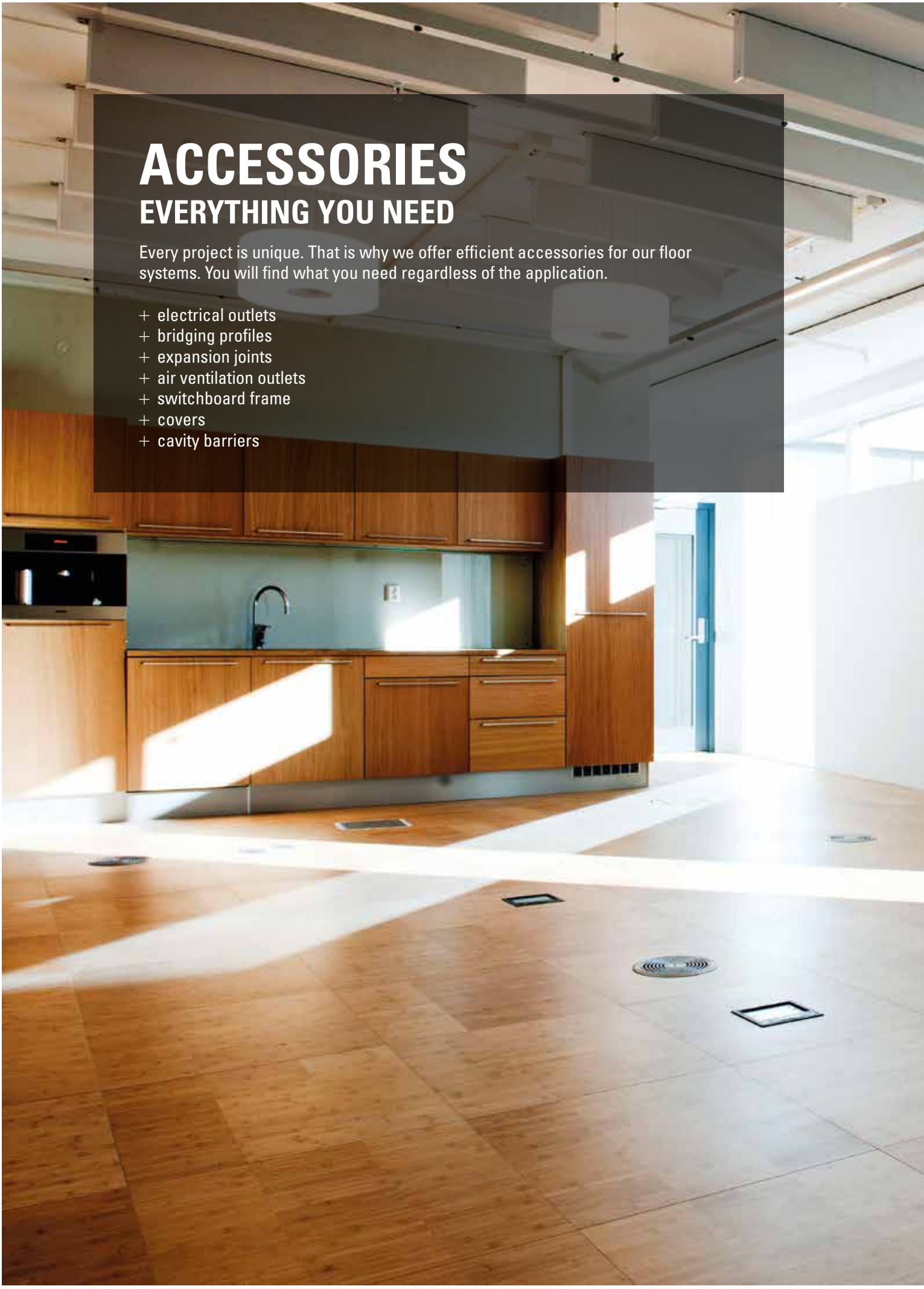
arabeska, Munich, Germany

DryMode

The convenient DryMode installation procedure for laying ceramic tiles ensures optimum results: stone panels or ceramic tiles of any size are joined at the factory with a layer of cork to form a precisely machined dry floor tile. This can then be laid and grouted particularly easily – and just 12 to 24 hours after laying the surface is ready to bear loads. The surrounding edge of the tile ensures automatic alignment of the joint pattern to a width of 3 mm. The cork acts to provide effective acoustic decoupling from the substrate. The quick installation and short waiting times associated with DryMode ensure a great finish to your system floor.

+ acoustic and structural decoupling from the substrate (13 - 18 dB impact sound attenuation)
+ emission- and dust-free laying for cleaner room air
+ elastic bedding of the tiles by means of a patented decoupling spine
+ low risk and ergonomic laying of large format tiles
+ can be revised at any time given change of use or subsequent installations





ACCESSORIES
EVERYTHING YOU NEED

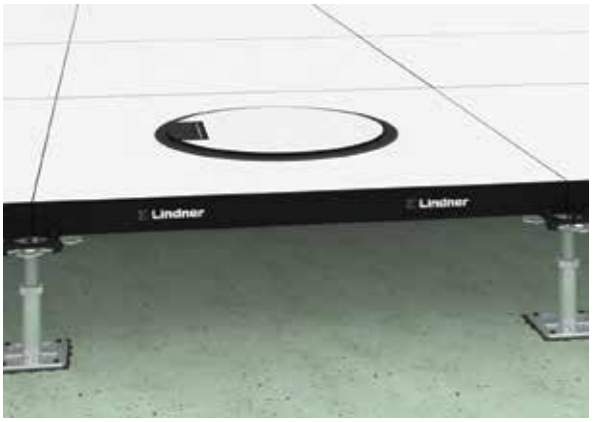
Every project is unique. That is why we offer efficient accessories for our floor systems. You will find what you need regardless of the application.

+ electrical outlets
+ bridging profiles
+ expansion joints
+ air ventilation outlets
+ switchboard frame
+ covers
+ cavity barriers

SMN-bygget, Trondheim, Norway
© Spot

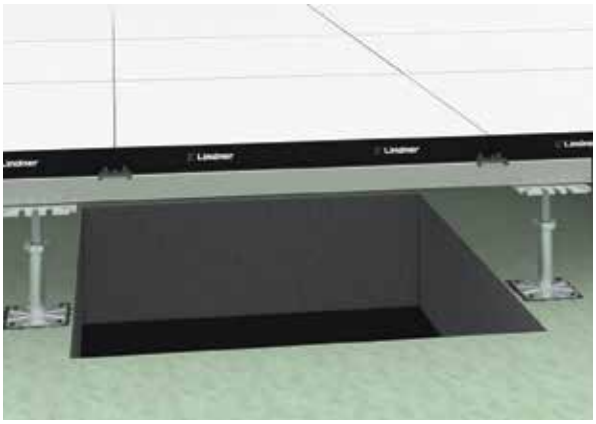
ELECTRICAL OUTLETS

Leads and cables can be routed in the cavity beneath the flooring system. The installation of electrical outlets enables electrical connections to be specifically positioned.



BRIDGING PROFILES

Individual structural conditions in some areas may require bridging in sections without pedestals. That is why we supply special bridging profiles. These are easy to install and enable the transfer of dynamic and static loads.



EXPANSION JOINTS

Expansion joint profiles are inserted into the system floor surface to absorb horizontal deflections and vertical settlements in a structural yet unobtrusive manner.

AIR VENTILATION OUTLETS

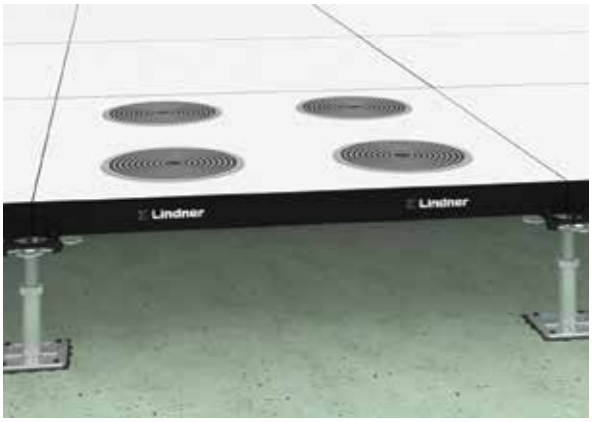
The use of ventilation inserts enables the air conditioning and ventilation of a room without creating draughts. We supply various systems for this:

Open System

Here the air forces its way directly through the installation cavity, which is designed as a pressure floor, to the corresponding ventilation inserts and thus into the room that needs to be ventilated.

Closed System

Here the air is directed via a duct system or via bulkheads that have a fixed connection to the ventilation inserts.



SWITCHBOARD FRAME

It is advisable to use control room designs in technical rooms: floor panels are omitted beneath control cabinets or server racks to enable trouble-free connection of cables to electronic components. The combination of two different heights of C-profile (CL and CM) provides adequate support and transfers horizontal and vertical loads. Cold air also flows through the floor opening. This regulates the operating temperature of the components.

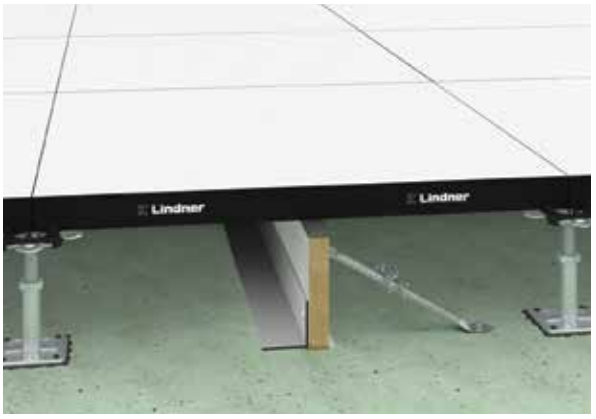
FACING

Front panels (coves) complete the system at staircases, platforms, etc. Stair nosing profiles cover the upper edges of the covers where required – e.g. when connections are open and visible. A bracket connection to the unfinished floor and bracing in the upper part of the cover ensure a stable method of construction.

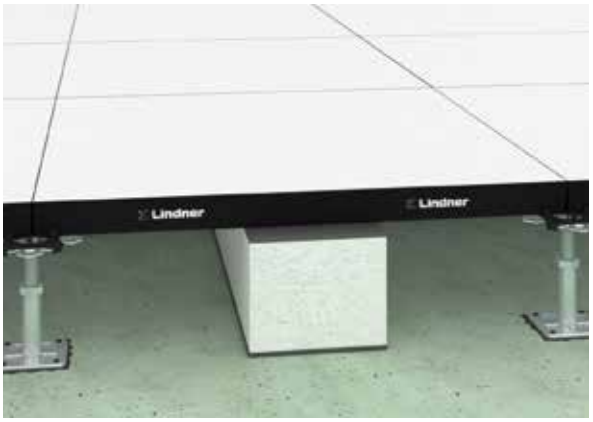
CAVITY BARRIERS

We supply three types of partitions for floor systems to meet different requirements:

- ventilation partitions made of coated wood-based material



- fire protection partitions made of aerated concrete (≥ 115 mm)
- sound insulation partitions made of aerated concrete (≥ 100 mm)

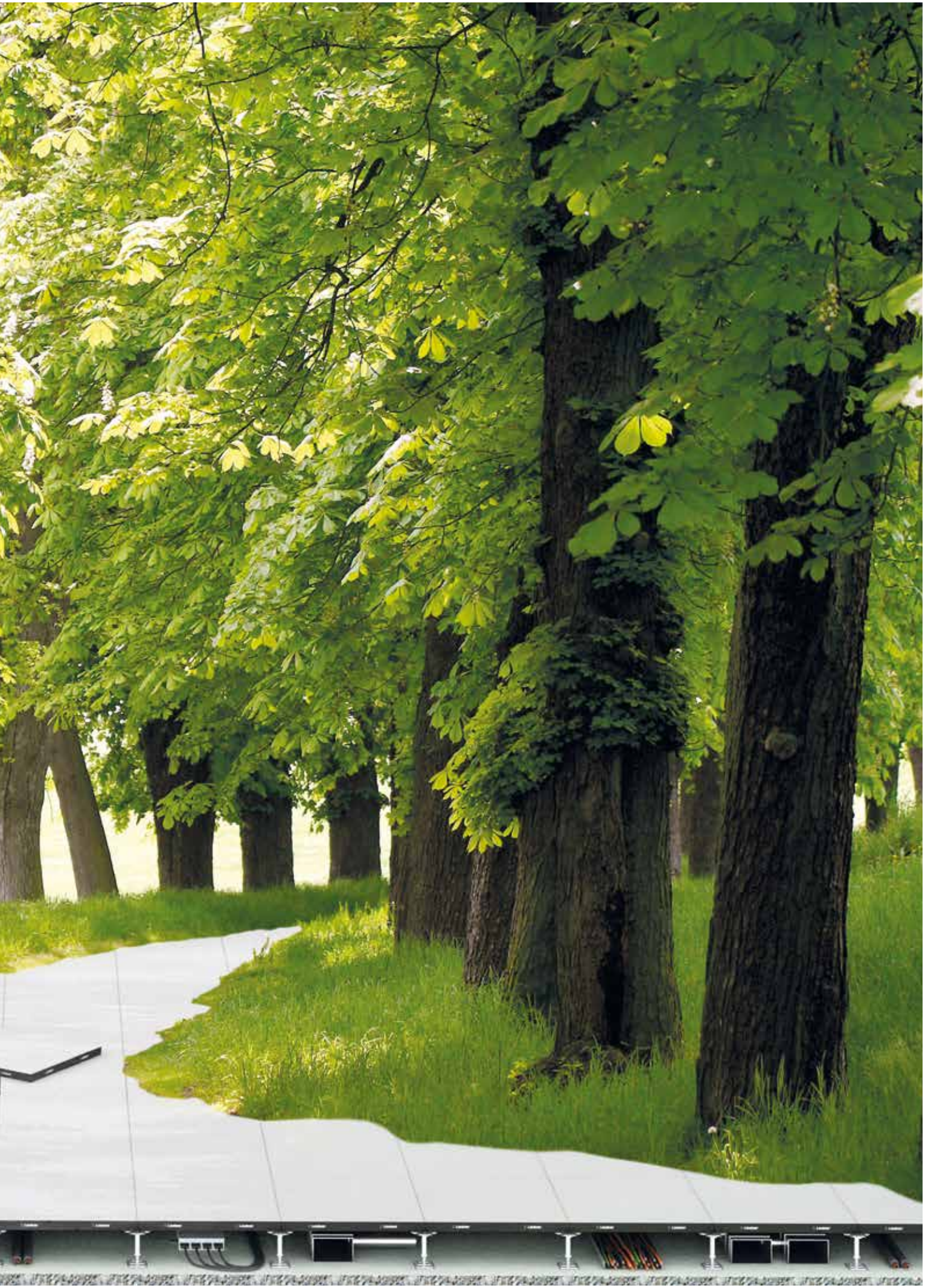


EXPERTISE

YOUR PRODUCT IS IN GOOD HANDS AT LINDNER

The standards expected of your floor can be very different depending on application area. To ensure you are best equipped for a wide variety of product requirements relating to your project, we supply reliable solutions in the following fields:

+ statics
+ fire protection
+ acoustics
+ electrostatics
+ climatic regulation
+ certifications
+ sustainability
+ service



STATICS

LOAD-BEARING CAPACITY

The permissible load-bearing capacity is exclusively determined by means of tests and investigations. The results are classified in acc. with EN 12825 (raised floors) or EN 13213 (hollow floors) and can be documented by certificates of conformity.

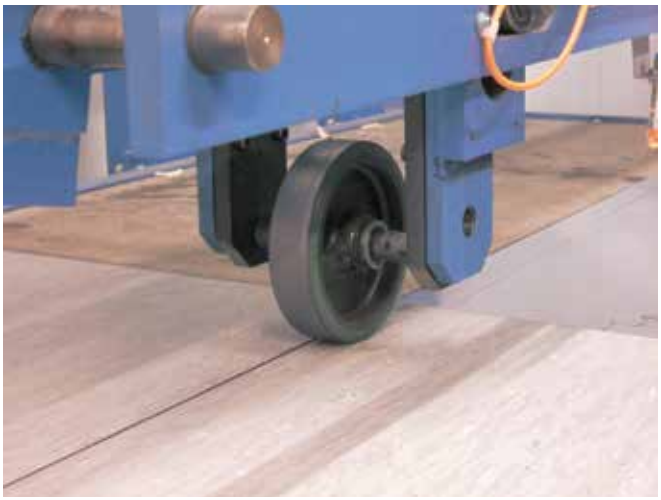
A distinction is made based on the following decisive points:
- load size
- support surface of the load indentor
- arrangement of the load on the test specimen
- safety factor

The point load is the critical load transfer in the case of floor systems. Floor systems are assigned to a load and deflection class based on a tested static load. Strip loads and distributed loads are not generally taken into account, since they cannot be tested due to their undefined load introduction.

Point Loads
A static load (a table leg, for example) is simulated when determining the point load. The permissible load thus determined is generally used as the basis for classification into the corresponding load and deflection class. According to the standard, the load is applied using a test indentor with an edge length of 25 x 25 mm.

Distributed Loads
Similar to a point load, the distributed load is a static load. In contrast to the point load, however, the surface of the "test indentor" is in this case 1 m². The term distributed load is common in connection with general building construction. Here it is used in dimensioning the load-bearing structure of a building. The specification or requirement for distributed loads is unsuitable in relation to floor systems. Practically speaking, the 1 m² test indentor spans beyond the system floor grid (60 x 60 cm) and thus the individual panel. The panel and pedestal only act as an interim layer for introducing the load into the subfloor.

Dynamic Loads
The following should be noted regarding the determination of the permissible dynamic load (e.g. a forklift truck):
- unladen weight of the vehicle
- total weight of the vehicle
- maximum wheel load
- wheel contact area of the wheels or rollers
- axle distance and track width
- maximum driving or tensile properties
- number, diametre, width and material of the wheels or rollers
- maximum acceleration or deceleration of the lifting motion
- safety factor
- manual operation or motorised vehicle



In light of the above, a corresponding safety factor is established for the determined static load (permissible total weight of the vehicle) and multiplied by the maximum permissible static load. It should be noted when selecting the floor covering that the floor covering itself, or rather it and its method of bonding, must be suitable for the specific requirements.

Static Values in acc. with EN 12825 and EN 13213
The European raised floor standard EN 12825 and the European hollow floor standard EN 13213 describe a system test procedure for panels and pedestals (i.e. the substructure) to determine the maximum load and sensible groupings. The load is introduced into the system via a test indentor measuring 25 x 25 mm (625 mm^2). The marked load points on page 114 are those to be tested. The failure criteria for classifying the system are the breaking load and deflection (vertical displacement) at nominal load or load level.

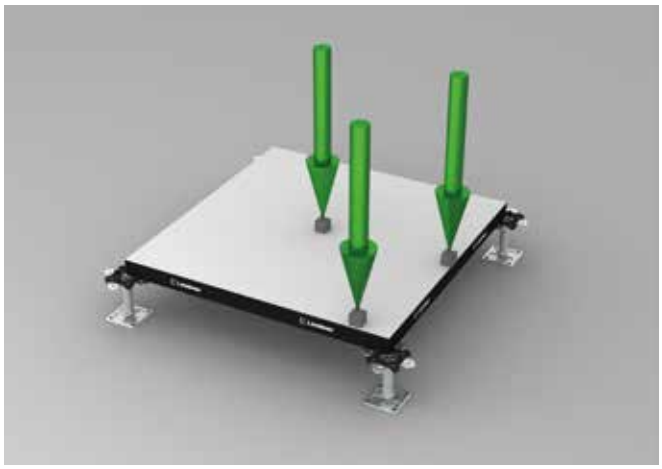
The following table shows exemplary use types and typical loads for floor systems assigned to the corresponding element classes and point loads in acc. with load levels. Standard values are specified here. Appropriate values should be used in cases where other loads predominate.

Load Classes

Class [1]	Breaking Load [2]	Nominal Load [3]	Examples of Application and Use
1	≥ 4,000 N	2,000 N	offices without public circulation and without heavy equipment
2	≥ 6,000 N	3,000 N	office areas with public circulation
3	≥ 8,000 N	4,000 N	rooms with increased static loads
4	≥ 9,000 N	4,500 N	areas with fixed seating, design offices
5	≥ 10,000 N	5,000 N	exhibition areas, workshops with light operation, storage rooms
6	≥ 12,000 N	6,000 N	as per load level 5000 N, but with higher load requirements, industrial and workshop floors, libraries, vaults, highly loaded floors, production areas such as clean rooms

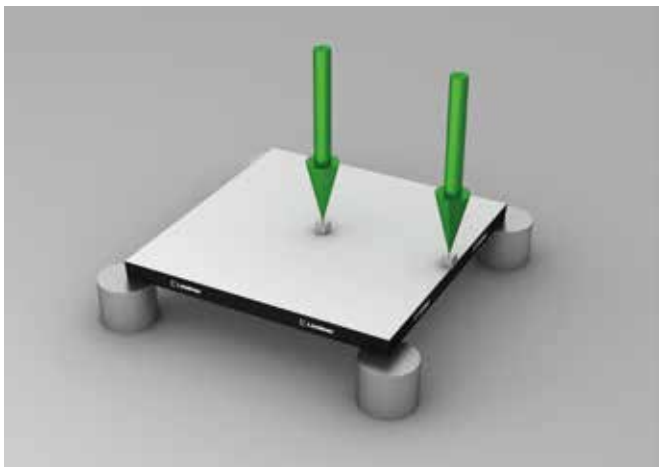
1) load classification in acc. with EN 12825 and EN 13213
2) the breaking load is determined by placing a 25 x 25 millimetre test indentor on the weakest point of the panel (see illustration on page 114) and increasing the pressure until the system fails
3) the nominal load or load level results from the breaking load divided by the safety factor n = 2
4) higher breaking/nominal loads are required in individual cases for floor systems with higher load requirements, see the NORTEC power and FLOOR and more® power systems

Deflection Classes
At a load equal to the nominal point load (this is the breaking load divided by the safety factor) the measured vertical deflection (sag) must not exceed the values shown in the following table.



Class	Maximum Deflection
A	2.5 mm
B	3.0 mm
C	4.0 mm

Static Values in acc. with International Standards
International standards describe a test of components for classification into load classes. The raised floor panels and pedestals are individually tested and classified. This involves the maximum load being applied on the panel via a 25 x 25 mm (625 mm²) test rig. The marked load points are those to be tested. The raised floor panel is placed on solid cylinders. The failure criterion is the breaking load and the recommended maximum deflection of 2 mm (l/300).



Exemplary Applications in acc. with International Standard GiB 100-1

Breaking Load [1]	Nominal Load [2]	Deflection [3]	Examples of Application and Use
≥ 4,000 N	2,000 N	maximum 2 mm	offices with low impact
≥ 6,000 N	3,000 N	maximum 2 mm	office areas with normal use and only low surface loading
≥ 8,000 N	4,000 N	maximum 2 mm	office and common areas with normal use and moderate surface loading
≥ 10,000 N	5,000 N	maximum 2 mm	office and common areas with normal use and normal surface loading
≥ 12,000 N	6,000 N	maximum 2 mm	technical rooms, office and common areas with heavy impact and increased surface loading
≥ 16,000 N	8,000 N	maximum 2 mm	technical rooms with increased loading requirements and corridor areas with increased traffic
≥ 20,000 N	10,000 N	maximum 2 mm	technical rooms with high requirements, print rooms, industrial floors with light traffic, storage rooms, workshops with light use

1) breaking load at load point 1, determined by a test rig cube with an edge length of 25 x 25 mm
2) nominal load at load point 1, equates to the breaking load divided by the safety factor n = at least 2
3) deflection of the panel when loaded with the nominal point load (l/300 mm)

SEISMIC SAFETY

There are many regions of the world that are at risk of earthquakes due to high tectonic activity. The risk associated with earthquake damage results from a combination of:
- seismic hazard on a reference field
- the amplification potential of the local subsoil
- the exposed material assets and their vulnerability, which depends on the construction method and the structural measures introduced for earthquake protection

The risk of earthquakes causing harm to people and buildings can be significantly reduced through targeted precautionary measures. Firstly, the structural compensation of vibrations can be enabled and secondly, components can be additionally fixed. This occurs in interiors for instance by means of fall protection, expansion joints and horizontal bracing.

The focus here is on the following objectives:
- protecting people against building collapse or falling parts
- limiting the damage to buildings or ensuring the function of individual sections
- preservation of basic services
- containment of possible consequential damage – due to the outbreak of fire, for example

In collaboration with the Institute of Earthquake Engineering and Engineering Seismology in Skopje, the requirements for categories A - F of the IBC (International Building Code) have been attested for Lindner Floor Systems – from low "seismic design" requirements in the event of slight vibrations up to very high ones with acute danger to life of people in the building.

FIRE PROTECTION

Fire protection is becoming ever more important as the size and complexity of buildings increases. The high harm potential to life, health and material values in the event of fire requires specialist support from fire protection experts. Lindner has such specialists with many years of experience. Preventive fire protection is our top priority and tradition in this respect.

Deficiencies in structural fire protection are often inconspicuous or concealed. The upcoming construction task requires an extensive site inspection and assessment of the current situation. Lindner's principle is that this involves a holistic approach that goes beyond trade interfaces and assesses the building in its entirety. This is based on its many years of sound experience in global construction activity.

Floor systems offer the opportunity to lay building service equipment and electrical installations in the floor cavity. Since this equipment introduces fire loads into the system floor's cavity, fire protection requirements are imposed in the case of rooms requiring protection.

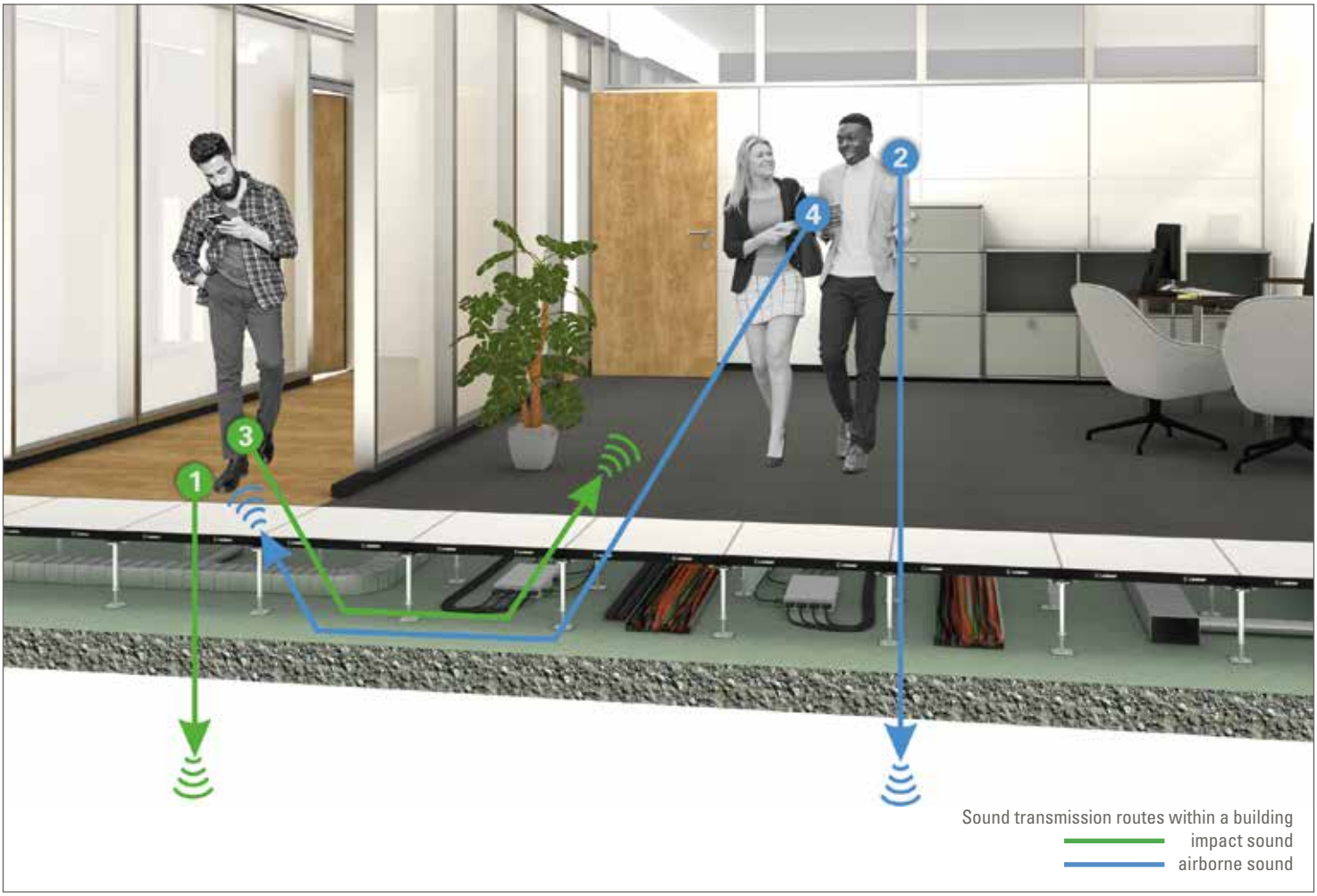
The following safety goals are defined in Germany and can of course be seen globally as relevant requirements for improving the safety level of a building, especially with regard to its users:
- preventing the formation of fire and smoke
- preventing the spread of fire and smoke
- ensuring sufficient rescue and fire-fighting options

Floor systems with a cavity over 200 mm in escape routes, or over 500 mm in other rooms, must therefore demonstrate a fire resistance duration in fire tests in acc. with DIN 4102-2 in addition to having a building material class of A1 as “non-combustible“. They must therefore withstand temperatures of up to 850 °C for at least 30 minutes to enable escape from the building in an emergency.

Building Approval Requirement	**Designation in acc. with DIN 4102-2**
	F = Fire Resistance Class **Fire Resistance Duration of 30 or 60 Minutes**
fire-retardant	F 30
fire-retardant and in essential parts made from non-combustible materials	F 30 - AB
fire-retardant and made from non-combustible materials	F 30 - A
highly fire-retardant	F 60
highly fire-retardant and in essential parts made from non-combustible materials	F 60 - AB
highly fire-retardant and made from non-combustible materials	F 60 - A
Building Approval Requirement	**Designation in acc. with DIN EN 13501-2**
	R = load-bearing capacity E = room enclosure I = thermal insulation
fire-retardant	REI 30
highly fire-retardant	REI 60
fire-resistant	REI 90

ACOUSTICS

BUILDING ACOUSTICS/ SOUND INSULATION



Sound transmission routes within a building
impact sound
airborne sound

1 Normalised Flanking Level Difference ΔL_w in acc. with DIN EN ISO 10140-3
The laboratory measurement is conducted in a vertical direction, i.e. from storey to storey with a standardised ceiling. This enables comparison between different systems. Higher numerical values are more favourable.

2 Rated Sound Reduction Index R_w in acc. with DIN EN ISO 10140-2
The laboratory measurement is conducted in a vertical direction, i.e. from storey to storey with a standardised ceiling. This enables comparison between different systems. Higher numerical values are more favourable.

3 Normalised Flanking Impact Sound Pressure Level $L_{n,f,w}$ in acc. with DIN EN ISO 10848-2
The laboratory measurement is conducted in a vertical direction in combination with a highly sound insulating partition wall suspended from the ceiling to the surface of the floor system. Lower numerical values are more favourable.

4 Normalised Flanking Level Difference $D_{n,f,w}$ in acc. with DIN EN ISO 10848-2
The laboratory measurement is conducted in a vertical direction in combination with a highly sound insulating partition wall suspended from the ceiling to the surface of the floor system. Higher numerical values are more favourable.

The allowance of tolerances in acc. with VDI 3762/DIN 4109 should be considered when measuring values within a building. Combinations of raised and hollow floors are to be to be assessed on a case-by-case basis. The planner is to determine the allowance of tolerances.

ROOM ACOUSTICS

Sound Absorption
Sound absorption is the loss in sound energy during reflection on the boundary walls of a room or on objects or people in a room. This loss arises due to the conversion of sound into heat (dissipation) or due to escape (transmission; e.g. via an open window).

Sound Absorption Coefficient α
The sound absorption coefficient α describes the volume of the absorbed proportion of the total incidental sound: $\alpha = 0$ means that there is no absorption, i.e. the entire incidental sound is reflected. At $\alpha = 0.5$ then 50 % of the sound energy is absorbed and 50 % is reflected. At $\alpha = 1$ then the entire incidental sound is absorbed, so there is no longer any reflection. Normal values are between 0.2 and 0.8 subject to design variant. Sound absorption coefficient α depends on the surface material and frequency. The ratio between absorbed and reflected sound energy plays a decisive role in the perception of sound in a room.

Rated Sound Absorption Coefficient α_w
The rated sound absorption coefficient α_w in acc. with DIN EN ISO 11654 is determined in relation to the measured values in acc. with DIN EN ISO 354 for the five octaves with medium frequencies of 250 to 4,000 Hz. This involves a specified evaluation curve in steps of 0.05 that is shifted so that the sum of the unfavourable deviations is ≤ 0.10. The value achieved at a frequency of 500 Hz then equates to the value of α_w.

Form Indicators
Should a sound absorption coefficient (absorption curve) exceed the value of the shifted reference curve by 0.25 or more, then one or more form indicators must be stated in brackets in addition to the α_w value. Form indicators equate to the following octave values:
L (low frequency) = 250 Hz
M (medium frequency) = 500 or 1,000 Hz
H (high frequency) = 2,000 or 4,000 Hz

Frequency
The frequency is the number of oscillations per second. Its unit is Hertz [Hz]. Frequency characterises the pitch. Octaves are used to divide the audible range into frequency intervals.

Range	Frequency f [Hz]
listening/music	20 - 20,000
speech/song	200 - 2,000
room acoustics	100 - 5,000

extract from DIN EN ISO 11654-B table B.1, classification of sound absorbers

Sound Absorption Class in acc. with DIN EN ISO	Requirements for the Sound Absorption Coefficient α_w
A	≥ 0.9
B	0.8 and 0.85
C	0.6 to 0.75
D	0.3 to 0.55
E	0.15 to 0.25
unclassified	≤ 0.1

ELECTROSTATICS

Preliminary Remarks
The layperson is generally aware of static electricity as a natural phenomenon because of discharged flashes on door handles. This electrical discharge does not usually pose a hazard for people. It could however startle them, which could result in mistaken actions. There are furthermore a series of consequences of static electricity that in part must be prevented under all circumstances; from the destruction of electronic components to the explosion of entire factories.

Brief Description

A build-up of static electricity leads to an electrical discharge
Static electricity is always generated when fixed insulators or liquid substances move, strictly speaking when they separate. An extreme example is the passing of dusty air along a wall. The charging voltage depends on the humidity level. Higher charges are generated in dry air than in moist air. Electronic components are extremely sensitive to this: they can be destroyed and/or suffer malfunctions given a discharge of just 30 V or more.
This can result in unmanageable risks and incalculable costs. Although it should be borne in mind that electronic components are generally shielded.

Static Electricity and Conductivity
The generation of static electricity can best be reduced, but never wholly prevented, by the selection of favourable materials. What can be prevented is that people and objects become too highly charged. This is done by ensuring that the resulting charges do not accumulate, but are immediately and evenly discharged again. If static electricity is constantly discharged via earthing as it is generated, then the charge cannot become sufficiently large to allow a discharge flash (electric shock) to occur.

Static and Dynamic Electricity
Dynamic electricity is understood as the electric current that is constantly supplied by the power station, flows in cables or is present as a voltage. Static electricity in contrast is not fed from a voltage source, but is to a certain extent unique and must build up again after a discharge.

Test Procedures for Electrostatic Properties

Resistance Measurement, Measurement Parametre Ω (Ohm)
Most tests are conducted in a stipulated test climate, but this is not uniform for the individual standards.

Vertical Resistance R_1 – DIN EN 1081
Electrical resistance, measured between a tripod-type electrode on the surface of the floor covering and an electrode on the opposite underside.

Resistance to Earth R_2 – DIN EN 1081
Electrical resistance, measured between a loaded tripod-type electrode on the surface of an installed floor covering and the earth connection.

Surface Resistance R_3 – DIN EN 1081
Electrical resistance, measured between two tripod-type electrodes that have been erected at a fixed distance of 100 mm apart on an installed floor covering.

Electrical Insulation to Earth (R_{ST} DIN 57 100 / VDE 0100 T-10)
The resistance is measured between the surface of the installed floor covering and the earth potential.

Charge Measurement, Measurement Parametre being kV (Kilovolt)
Walk Test (DIN IEC 61340-4-5)
The charging voltage is measured by a test person shuffling across an installed floor covering wearing specific footwear.

Terms:

Antistatic

Elastic floor coverings are also antistatic if they are conductive. Floor coverings are antistatic if they do not generally generate any disruptive electrostatic charges. This is the case if the charge during a walk test is ≤ 2.0 kV.

Conductive

Floor coverings whose earthing resistance R_2 – procedure B – is ≤ 10^9 Ω are conductive. In many cases, however, even lower resistances are demanded.

Insulation

A floor is insulating in terms of the DIN 57 100 / VDE 0100T610, section 6.3.3 (offers safety against contact voltages resulting from mains current) if the electrical insulation to earth R_{ST} does not exceed the following values:
50 kΩ = 5 x 10^4 Ω in installations with nominal voltage below 500 V
100 kΩ = 1 x 10^5 Ω in installations with higher nominal voltages.

Note:

The electrical insulation to earth can only be calculated approximately from the resistance (R_1 – procedure A – DIN EN 1081) due to the differing test conditions. Experience tells us, however, that conductive floors with R1 < 10^6 Ω do not meet the VDE requirements. Moisture from humidity in the floor system can moreover reduce the electrical insulation to earth with all floor coverings.

EARTHING RESISTANCE

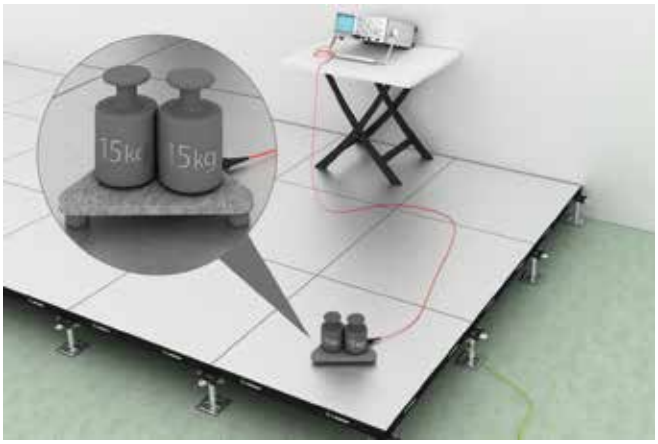
Earthing Resistance R_2 – Procedure B – DIN EN 1081

Measurement of earthing resistance R_2 on the installed floor covering. The electrical resistance of an installed floor covering is measured between and electrode on the surface and the earth potential. A tripod-type electrode is placed on the dry floor covering (48 hours after installation) and connected to the resistance measuring device (Ohmmetre). The connection to earth is also connected to the resistance measuring device. The tripod-type electrode is loaded with at least 300 N before the voltage is applied.

Note:

Values of 10^{10} Ω mean that charges on people can decay in around 1 second. A covering is sufficiently conductive below 10^8 Ω to prevent the risks of electrostatic charges igniting flammable dusts and gases during walking. Below 10^6 Ω a covering is also suitable for rooms where explosive substances are stored or produced. The respective requirements of trade associations (e.g. TRGS 727), electronics manufacturers and users must in each case be observed.

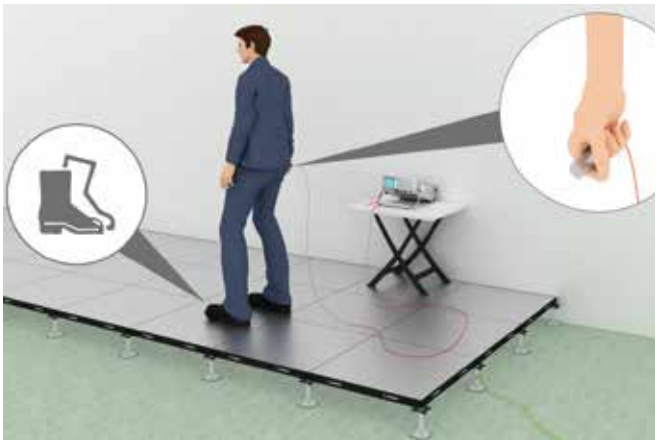
Tripod-type Electrode:	aluminium plate with rubber feet
Weight:	≥ 300 N
Test Voltage:	R ≤ 10^6 Ω at 100 V; R > 10^6 Ω at 500 V
Implementation:	at least 3 measurements



CHARGE MEASUREMENTS

Charge measurements in a walk test, DIN IEC 61340-4-5
– measurements of the propensity for electrostatic charging in a walk test

The charge voltage is measured after 1 minute of walking (shuffling) at 23 °C and 25 % relative humidity. A special rubber material provided by the Bundesanstalt für Materialprüfung (BAM –Federal Institute for Materials Testing) is used for the soles of the shoes. This is slightly conductive and provides a resistance of around 10^9 Ω between the test subject and a conductive floor. The charge voltage is measured whenever the test subject has both feet in contact with the floor covering. A floor covering is considered to be antistatic in line with EN 1815 if the charge voltage does not rise above 2,000 V.

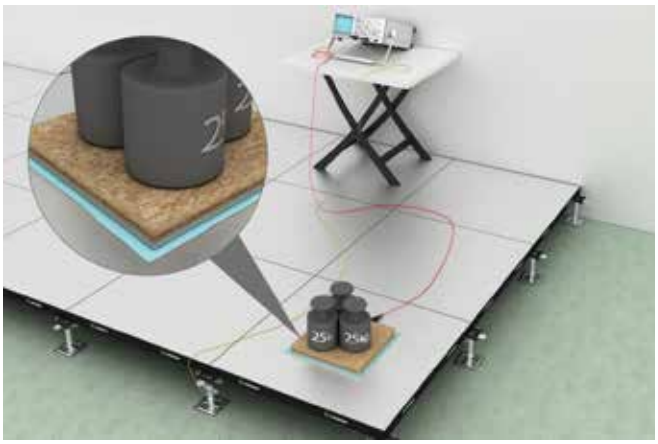


ELECTRICAL INSULATION TO EARTH

Electrical insulation to earth R_{ST}, DIN VDE 0100/Part 610
– measurement of the electrical insulation to earth between the surface of an installed floor covering and the earth potential.

An electrically conductive floor covering must also be insulating in the sense of VDE 0100 at workplaces where components susceptible to electrostatics are handled and where work regularly involves exposed voltages, for example in a test facility. A measurement of the electrical insulation to earth R_{ST} is used to assess its electrical insulation capacity.

Note:
A lower limit of electrical insulation to earth R_{ST} for the above-mentioned workplaces is VDE 0100/Part 410.
The electrical insulation to earth R_{ST} must be at least 5 x 10^4 Ω at workplaces where the nominal voltage does not exceed 500 Volts AC. The electrical insulation to earth must be at least 1 x 50^5 Ω if nominal voltages are between 500 V and 1000 V AC. The size of the electrode surface is 625 cm².



CLIMATIC REGULATION

JOINT PERMEABILITY

The ventilation via the floor cavity is only possible if the impermeability of the floor system is guaranteed. In the case of open airflow beneath the raised floor system, specific values must be adhered to.

The Lindner NORTEC Floor System already has, without further measures a very low air leakage rate. In order to further optimise the joint permeability coefficient of a raised floor system, the wall connections can be sealed.

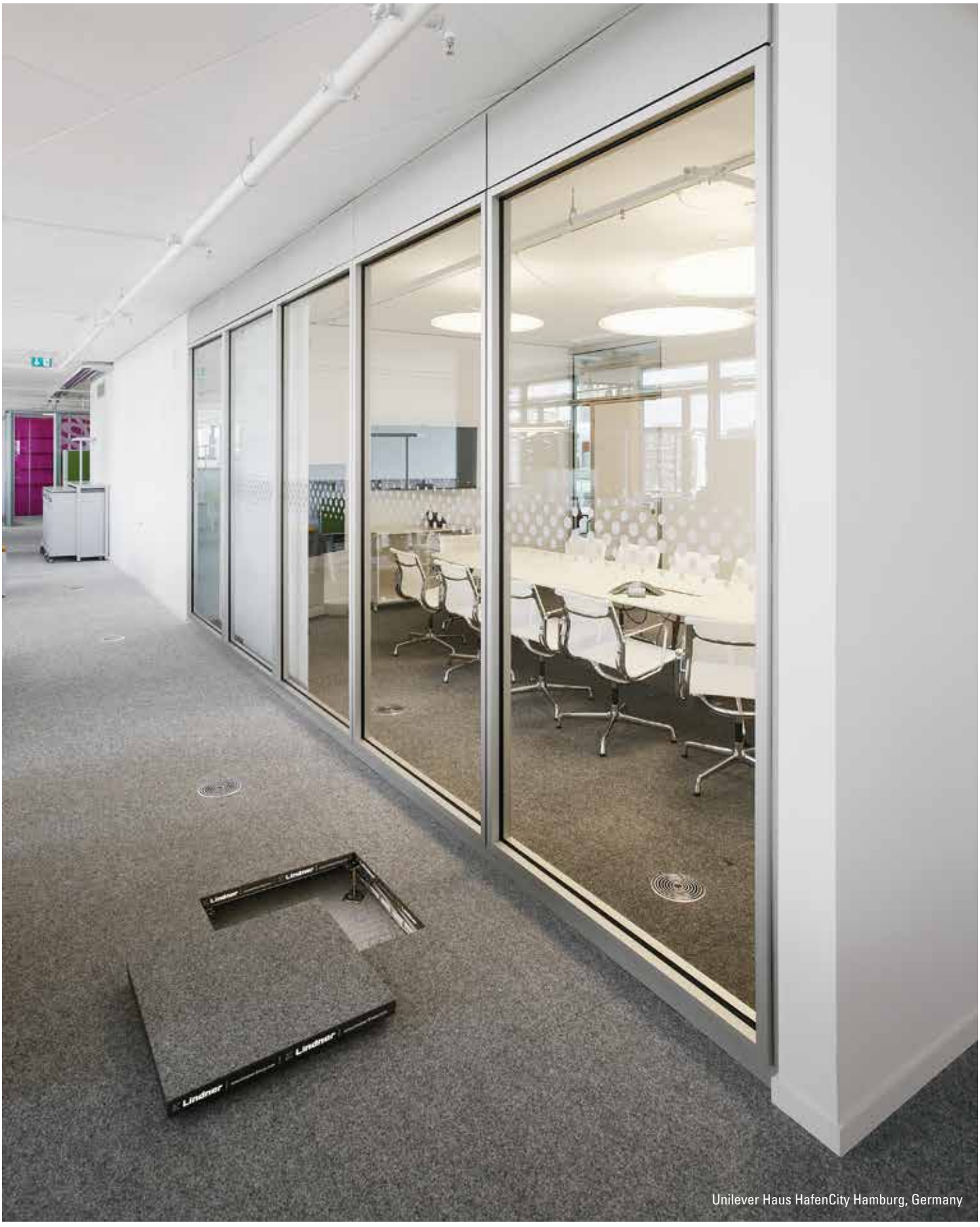
For NORTEC, the following measurement results have been confirmed by the Institute for System Floor Technology. These are laboratory values. On-site tests can deviate from them, sometimes considerably, due to many additional influencing factors.

PRESSURE DIFFERENCE	**AIR LEAKAGE RATE**	
	Area-Based	**Area-Based with Wall Connection**
25 Pa	0.22 l/s m²	0.24 l/s m²
50 Pa	0.36 l/s m²	0.38 l/s m²

The use of loose-laid carpet is advisable to further optimise joint permeability in floor systems. Staggering the joint arrangement of the carpet tiles with that of the floor system reduces the air leakage rate to virtually zero.

↘ UNILEVER HAUS HAFENCITY, HAMBURG, GERMANY

In June 2009, Unilever moved into the new corporate headquarters at Strandkai in Hamburg's HafenCity. The aim of the construction project was to create a sustainable building – with this principle in mind, Lindner carried out extensive fit-out works in the new office complex. This included the use of the Raised Floor Systems NORTEC and NORTEC acoustic: The low air leakage rate of the panels promises a tight floor system so that server racks, switch cabinets or similar can be optimally ventilated via the cavity – a targeted air leakage at the desired locations is the result.



Unilever Haus HafenCity Hamburg, Germany

CERTIFICATIONS

LEAN AND EFFICIENT – INTEGRATED MANAGEMENT SYSTEM

Our Integrated Management System (IMS) includes methods and tools for meeting quality, environmental and energy requirements in an unified structure. This involves us utilising synergies and bundling resources. This way we succeed in operating a lean and efficient integrated management system – in contrast to individual, isolated systems.

Quality Management – ISO 9001
The globally recognised ISO 9001 standard stipulates the minimum requirements for a process-oriented quality management system. Its approach focuses on process optimisation. This has enabled us to continuously improve our corporate performance and to meet our customers' needs in the best way possible. Our certificate denotes adherence to ISO 9001.

Environmental Management – ISO 14001
The overriding aim of an environmental management system is to promote environmental protection, reduce environmental impacts and thus correctly implement environmental objectives – in harmony with economic, social and political requirements. ISO 14001 is the standard under which our environmental management system is certified.

Energy Management – ISO 50001
The aim of an energy management system in acc. with ISO 50001 is the continuous improvement of energy performance. We use this standard to constantly operate and optimise our certified energy management system. Its systematic approach enables us to improve our energy performance within the company, increase our energy efficiency and at the same time optimise energy use.

Location	Certification		
	ISO 9001	ISO 14001	ISO 50001
Lindner SE	✓	✓	–
Lindner NORIT GmbH & Co. KG	✓	✓	✓

STANDARDS AND APPLICATION GUIDELINES

Bundesverband Systemböden e.V.
The Bundesverband Systemböden e.V. (BVS) is the industry association of the major system floor manufacturers.

The BVS has facilitated and garnered the interests of the system floor industry since 1989. It collaborates with representatives from the 20 or so member companies to devise national and European DIN/CEN EN standards and guidelines for floor systems, i.e. for raised floors, heavy-duty floors, control room floors, clean room floors and hollow floor systems.
The BVS supports and participates in the certification of floor systems as to their conformity with the standards. It provides support to planners, specialist planners, architects, structural engineers and building owners.
(source: www.systemboden.de)

It is hard to imagine a modern administrative or office building without a system floor, therefore this belongs among the everyday topics for planners and architects. Numerous technical issues and aspects relating to building law and building regulations must already be considered during the planning stage.

EN 12825 for Raised Floors
and EN 13213 for Hollow Floors
EN 12825 and EN 13213 introduced standardised European test procedures and performance classes for hollow and raised floors based on the Bauproduktenverordnung (BauPVO – Construction Products Regulation). The associated application guidelines implement the European standards into nationally applicable requirements and rules in compliance with the German building code and the generally recognised rules of technology.

The full set of EN standards can be obtained e. g. from Beuth Verlag GmbH | Burggrafenstraße 6 | 10787 Berlin | Tel. +49 30 2601 2260 | www.beuth.de

International Standard GiB 100-1
This guideline establishes uniformly assessable evaluation standards and criteria for raised floor systems and their components for international market application. It specifies the properties and the requirements for the behaviour of raised floors, which are mainly used for the interior finishing of buildings under the provision of free accessibility to the cavity.

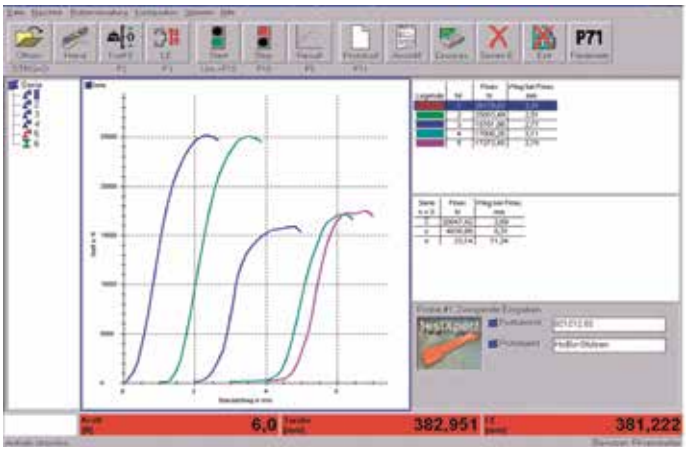
Requirements and verifications for the raised floor system and its individual components are specified. For this purpose, various test methods and specifications for dimensional accuracy are described.

All relevant international standards and guidelines were taken into account when specifying the test methods and dimensional accuracy:

- EN 12825 (Europe)
- PSA MOB (Great Britain)
- CISCA (USA)

GiB 100-1 is regularly adapted to the latest technical developments.

Factory Tests
The company standards (factory test certificates) stipulate suitable test criteria for practical application. These ensure the trouble-free functioning of floor systems by means of a special requirement profile.



Property Services Agency (PSA)
"Method of Building" (MOB), the standard for raised floors, was introduced in 1982 by the "Property Services Agency" (PSA) and was the old regular standard for raised floors in the United Kingdom of Great Britain and Northern Ireland, although it is increasingly being replaced by EN 12825.

Ceilings & Interior Systems Construction Association (CISCA)
CISCA is a USA association of manufacturers from the interior fit-out
industry; among other things it publishes test specifications for the raised flooring industry. The test standards were devised following the submission
of comments from USA and international manufacturers.

The requirements for floor systems arising from the CISCA and MOB_PSA- standards are over specified for normal use, which results in over dimensioned floor systems. The significantly newer EN is better coordinated to loads that actually occur during use. It achieves more cost-effective systems that are also easier to handle and lay. The architectural practice Stanhope plc from London wrote an opinion paper on this and we can provide a copy on request.

SUSTAINABILITY

In 2007, Lindner was a co-founder of the Deutsche Gesellschaft für Nachhaltiges Bauen (DGNB – German Society for Sustainable Building) and has since established itself as a specialist in "Green Building".

We consider implementing projects in a sustainable manner to mean acting with ecological, social and economic responsibility. All our processes are designed with the objective of continuously minimising the use of energy and resources and taking into account their impacts on people and nature. We think in closed loops that cause little to no waste when developing our high quality products. Coupled with competent service, this is how we assure the most important aspects in relation to the commonest building certifications.

HEALTHY LIVING AND WORKING

We develop solutions for modern and sustainable working environments that impress companies and their employees in equal measure. Solutions that provide the freedom for creativity and exchange of knowledge, yet at the same time successfully overcome the challenge of an economic and efficient use of space. Detailed workshops in advance ensure a space concept that is perfectly adapted to all use requirements. Criteria such as acoustics, fire protection, ergonomics and thermal and visual comfort are naturally included in every consideration right from the start.

FIT FOR THE FUTURE

"Nothing is as constant as change." And that is a good thing. This is how our family business has continued to develop in an authentic way for over 50 years and realigned itself time and time again to the prevailing statutory and social conditions. Then as now, customer needs are our top priority. We love the challenge this brings and always find solutions that Add.Vantage for people and the environment. We are in a strong position to create healthier living and working areas based on the established standards for sustainable building. Whether investment protection or user-oriented healthy working models – people and their needs take centre stage.

THE BASIS FOR YOUR GREEN BUILDING

The optimum products for your interior fit-out and building envelope should be selected to be technically functional and efficient. Only in this way can construction projects with sustainably inspired standards meet the quality and target specifications for building ecology. We are a full-service provider, so we maintain control of all the components in our construction products. At the same time, we continuously develop our capacities and system products: In addition to Cradle to Cradle Certified® products, we also supply emission-tested system products. This means we fall below the strictest specifications for indoor air quality in relation to aldehydes and solvents (VOCs). Regular test chamber measurements in acc. with the standards of the Indoor Air Comfort GOLD® quality mark (e.g. the AgBB measurement scheme) are conducted for all our products. These products ensure the success of your construction project given their seamless verification – especially regarding certifications in acc. with LEED, DGNB, BNB and other common evaluation systems.

+ conservation of resources
+ well-being
+ quality
+ investment protection

breeam LEED DGNB Deutsche Gesellschaft für Nachhaltiges Bauen German Sustainable Building Council

ENVIRONMENTAL PRODUCT DECLARATIONS

Environmental product declarations enable the ecological footprint of our system products to be tracked. They provide information on aspects such as reuse, recycling percentages, emissions, material properties, basic materials and percentages by weight. Environmental product declarations are also used by architects, planners and auditors as a standardised data basis for tenders, ecological assessments and building certification projects in acc. with LEED, DGNB, BNB and BREEAM.

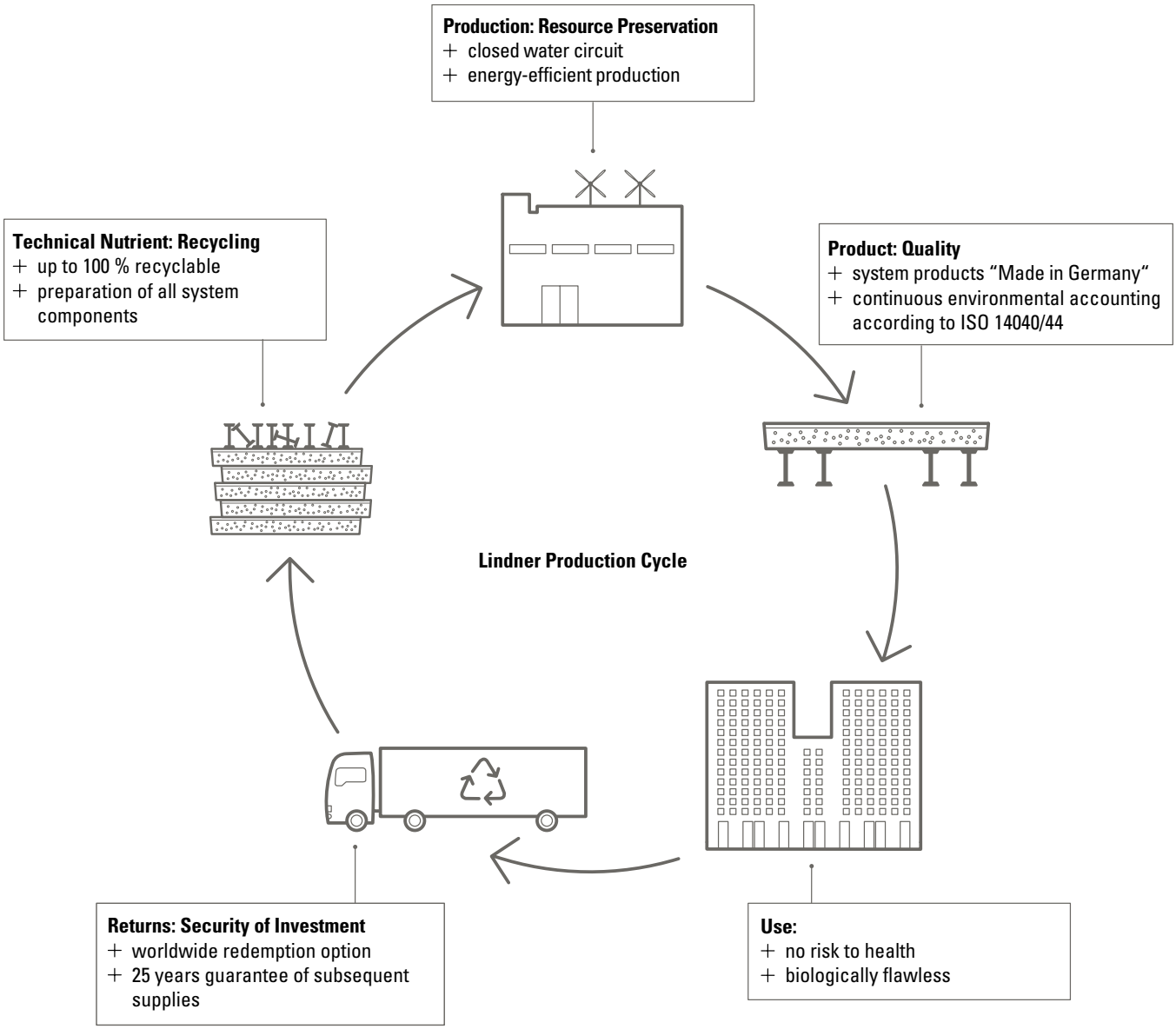
We provide both well-founded self-declarations in acc. with ISO 14021 and verified environmental product declarations in acc. with ISO 14025 and EN 15804 in relation to our floor systems.

CARBON-NEUTRAL

We believe that carbon-neutrality requires to work constantly to reduce our ecological footprint. We have already achieved carbon-neutrality for some system products and are on the path to achieving it for other products. We can attest to this by means of environmental product declarations in acc. with ISO 14025 and EN 15804. Our company-internal know-how in producing ecological assessments directs us on this path.
We know what we have to do, because we know where we stand.

MATERIAL CYCLE

We avoid waste and secure the resources of tomorrow by closing our material loops. This starts with a deliberate choice of components and materials, is augmented by a 100 % modular composition and extends into a wide variety of take back options with opportunities for reuse and recycling. We attest to this, among others, by certifying almost all of our products according to the Cradle to Cradle Certified® Products Program.



CRADLE TO CRADLE®

Lindner products are developed and produced with an optimised use of resources for as long a service life as possible. In line with the Cradle to Cradle® principle, we are increasingly observing the complete product loop. Our aim is to avoid the generation of waste at the very start of the life cycle, to increase the proportion of renewable energy and realise a closed water loop.

We had a wide range of our products certified in acc. with the Cradle to Cradle Certified® Product Standard in 2018 to meet these requirements. This included the following products achieving the Cradle to Cradle Certified® Silver certificate:

- NORTEC ↘ page 16
- FLOOR and more® ↘ page 54
- FLOOR and more® power ↘ page 56
- FLOOR and more® arena ↘ page 62

RESPONSIBLE MATERIAL PROCUREMENT

The Forest Stewardship Council® (FSC®) is a global, non-profit organisation whose purpose is to promote responsible forest management around the world. The FSC® defines standards for responsible forest management in acc. with established principles that are developed and supported by interested parties representing the environment, society and economic affairs. The FSC® also helps to retain woodlands and protects the interests of people and animals that live in or from these woodlands. Please visit www.fsc.org for further information.

RECYCLED FSC™ C119815	The recycling mark represents products that are made exclusively from recycled materials. The wood-based materials contained in the product were properly recovered and recycled in the manufacture of the product.
MIX FSC™ C119815	Only materials from FSC® certified woodlands, recycled material and materials from other controlled sources were used when manufacturing the product. FSC® certified material or post-consumer recycled material must be used to at least 70 % or at least an equivalent quantity must be used in the manufacturing process for products bearing this mark.

↘ HOFSTATT – CENTRAL MUNICH, GERMANY

Work on an ambitious construction project at the former publishing premises of the Süddeutsche Zeitung began in 2011: a large area in central Munich situated between Sendlinger Straße, Hotterstraße, Hackenstraße and Färbergraben was developed into a district named “Hofstatt“ with retail, office and residential use. The construction project saw Lindner being commissioned with a complete interior fit-out package. This included dry lining and natural stone work in the passage and the high quality interior fit-out of all rental units in the complex using Lindner Hollow and Raised Floor Systems, Partitions, Heated and Chilled Ceilings and bespoke Joinery Services.

Hofstatt – Central Munich, Germany

SERVICES

RECONDITIONING

We offer the eco-friendly option of reconditioning used NORTEC panels. This involves the panels being removed on site, delivered to Dettelbach, sanded on both sides and reformatted. The result is a refurbished panel with slightly reduced dimensions. The statics are tested in advance and steel sheet is applied to the underside if required. The customer receives a low-cost panel that – with the exception of the dimensions – is indistinguishable from a new panel. This is one way in which we contribute to the careful and economical use of scarce resources.

Removal → **Transport** → **Recon-ditioning** → **Return transport** → **Installation**

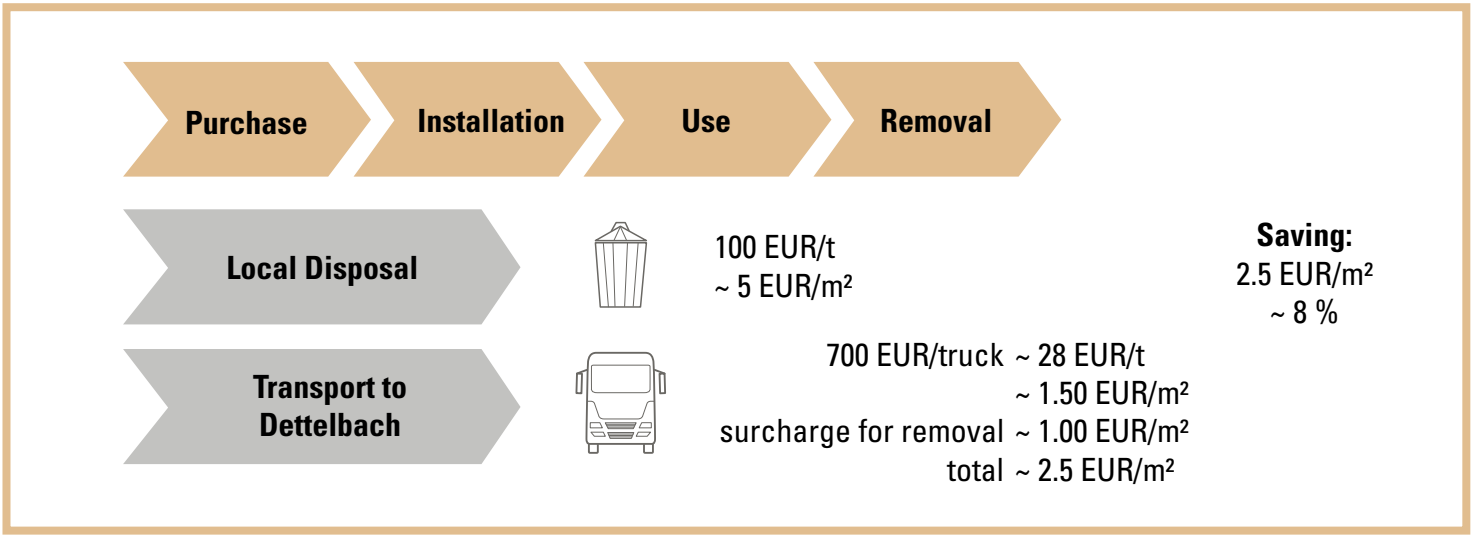
Cost saving: 30 %

FLOOR COVERING RENOVATION – THE ECO-FRIENDLY ALTERNATIVE

Floor covering renovation involves the floor panels to be renovated being taken up and the old surface being renewed on site. The floor panels are subsequently reinstalled, including all ancillary works. This principle can be used to transform entire offices and warehouses overnight without interrupting everyday operations.

TAKE-BACK GUARANTEE

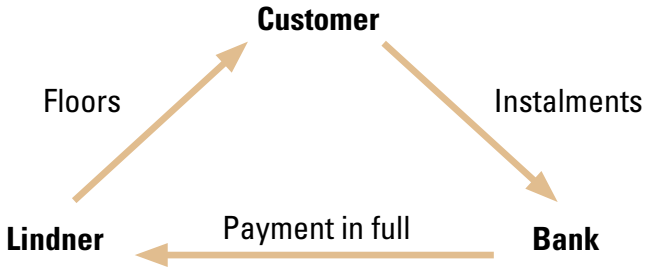
We offer you a globally valid take-back guarantee that applies to new products for 25 years. You can return your NORTEC panels without charge, provided they meet the defined conditions (e.g. the are free from contamination and oil). You only bear the freight costs. This offer is therefore cost-effective for you when the local disposal costs are higher than the freight costs to Dettelbach. Further details can be found in the guarantee form.



LEASING

We can offer you an attractive finance option whereby you only pay a monthly instalment instead of the full purchase price. This protects your liquidity, reduces your balance sheet, increases your equity ratio and contributes to an improvement in your rating. It can also lead to savings in corporate income tax and business tax taking into account the respective national leasing legislation.

Customer Advantages
+ protection of liquidity; "pay as you earn"
+ balance sheet "reduction" – increased equity ratio
+ savings in corporate income tax and business tax (tax benefit can be explicitly calculated)
+ possible for both project and supply business



REFURBISHMENT

The high-quality refurbishment and modernisation of existing buildings is and will continue to be a central challenge for the construction industry. In relation to optimising energy and technology, sustainability, cost-effectiveness and historical preservation there is a need to find solutions that are both user-oriented and future-oriented.

Together we can record and evaluate different desires, specifications and general conditions for indoor and outdoor use, in order to transform them into a balanced concept.

Each renovation of an existing building is an individual project: no two projects are alike, but each makes high demands on the competence of those involved in all project phases. The parallel management of multiple trades is a special challenge that requires highly developed coordination and information skills. We rely on the use of Lean Construction Management on our construction sites. This enables us to create transparency for all the parties involved in construction and to ensure the result in line with the quality, deadline and budget requirements.

Lindner will gladly support you from the first assessment of the building to be renovated. Our experts in fire protection, thermal building physics, statics, building control systems, clearance of harmful substances, etc. make a decisive contribution in this phase so that everything runs smoothly later in the construction phase. We have experience in dealing with historical building fabric and the challenges that need to be taken into account when taking care of a monument.

BIM

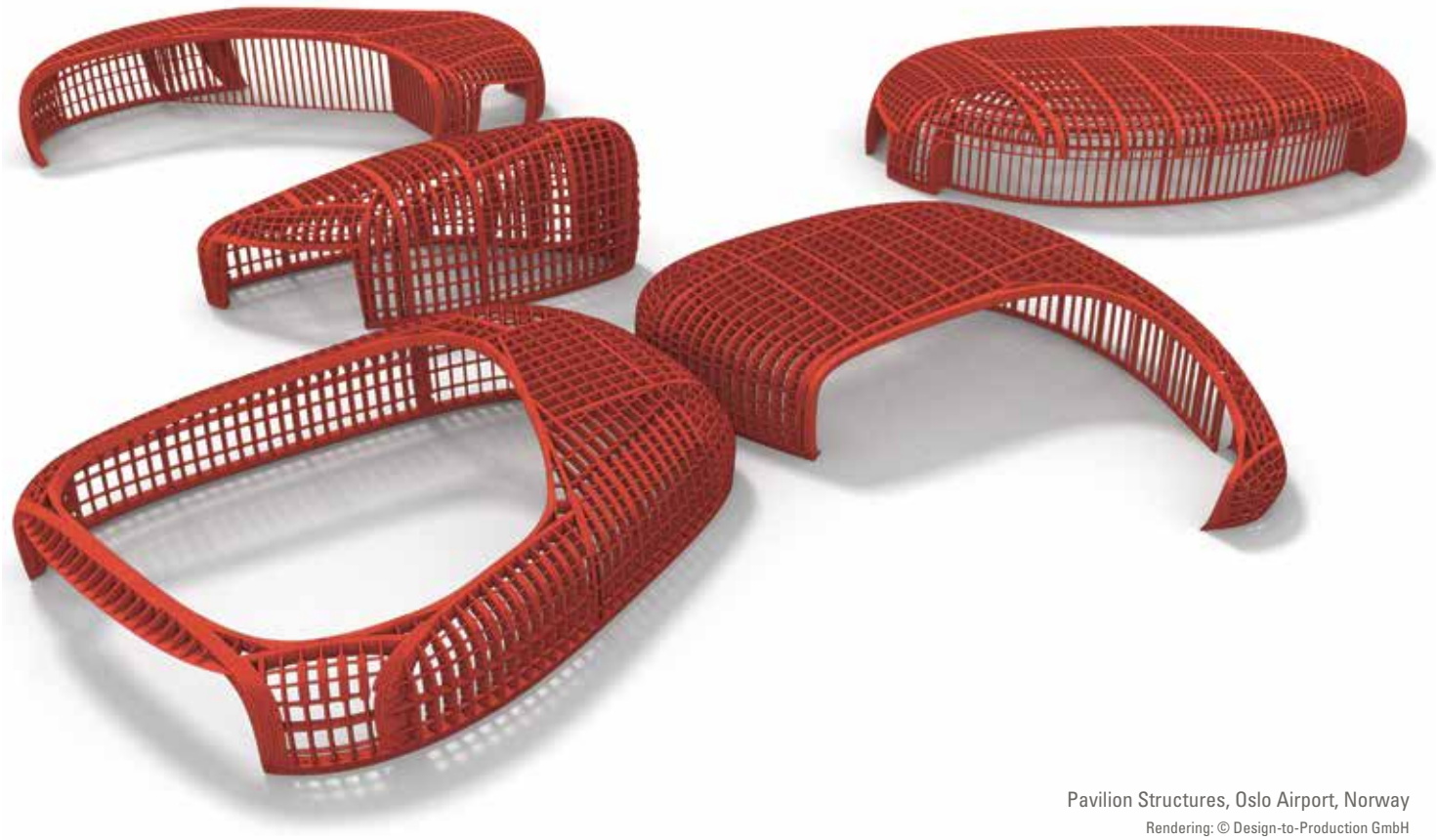
BIM is a software-based modelling tool that can be used to plan, design, construct, operate and maintain buildings. It is based on the consistent alignment of all technical and commercial processes into a continuous, highly integrated, value-added process. At the heart of its methodology is a virtual model of the building, which is loaded with all the data from building planning, construction and facility management. In simpler terms: BIM is the new, common language for all those involved in a building's entire planning, construction and use phases – a milestone for greater effectiveness, quality, transparency and flexibility. Lindner is a manufacturer of highly customisable system products and therefore offers it customers a wide range of parametric BIM objects that are free to download. These objects are equipped with extensive intelligence and planners can configure them with a high degree of freedom and quickly integrate them into the building model, taking into account the actual manufacturing possibilities.

Advantages for Planners and Architects

+ detailed visualisation of the project requirements
+ quick simulations and feasibility studies during planning and implementation
+ direct control of quality, costs and deadlines
+ early detection of collision points and effective error correction, if necessary
+ complete documentation of all activities for a smooth handover

Advantages for Clients

+ simpler coordination of contractors thanks to a common database
+ precise pre-planning of all construction-related processes
+ easy control of the target/actual status in each phase, with even daily updates
+ accounting for the services rendered with a visual link to the model
+ intelligent detailed documentation of the creative and technical building structures for the marketing and use phase



Pavilion Structures, Oslo Airport, Norway

Rendering: © Design-to-Production GmbH

LEAN CONSTRUCTION MANAGEMENT

We stand by our agreed deadlines. We do everything we can to achieve this and set literally "all levers in motion" – but not all at once. Practical implementation of Lean Construction Management enables us to achieve astonishing effects on our construction sites: optimised installation processes, higher execution quality, greater certainty on deadlines and costs.

We create the basis for this in the weeks prior to the start of construction with all those involved in the joint planning session between clients, planners and performers. With the start of installation on site, we effectively implement a continuous cycle that is coordinated with the complexity of the construction task, the upstream and downstream trades, the deadlines and the logistical, spatial and other general conditions. This requires regular monitoring, so we start with a weekly preview and a daily cycle review.

Clear structures, value-add processes and efficient cycle reviews enable us to create the best prerequisites for our construction team's main tasks. We therefore not only assure joint achievement of the stated objectives, but also smooth the path towards doing so.

Main Picture: Rue Grenelle 10, Paris, France
© Hugo HÉBRARD

Visualisations: © Lindner Group

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