

PHENOLIC PULTRUDED  
GRP-GRATINGS

## PHENOLIC PULTRUDED GRATINGS FOR YOUR APPLICATION:

+ Offshore transmitter platforms

+ Refineries

+ Industrial/  
processing plants

+ FLNG/LNG vessels

+ Mobile offshore  
drilling units

+ Offshore production  
platforms

+ Tunnels/mass transit

+ Docks/jetties/  
load-out areas

+ Mining

+ Extreme cold  
(Arctic) areas

+ Shipboard applications

+ And many more ...

+ Aircraft

### GLASS-REINFORCED PLASTIC AT LICHTGITTER

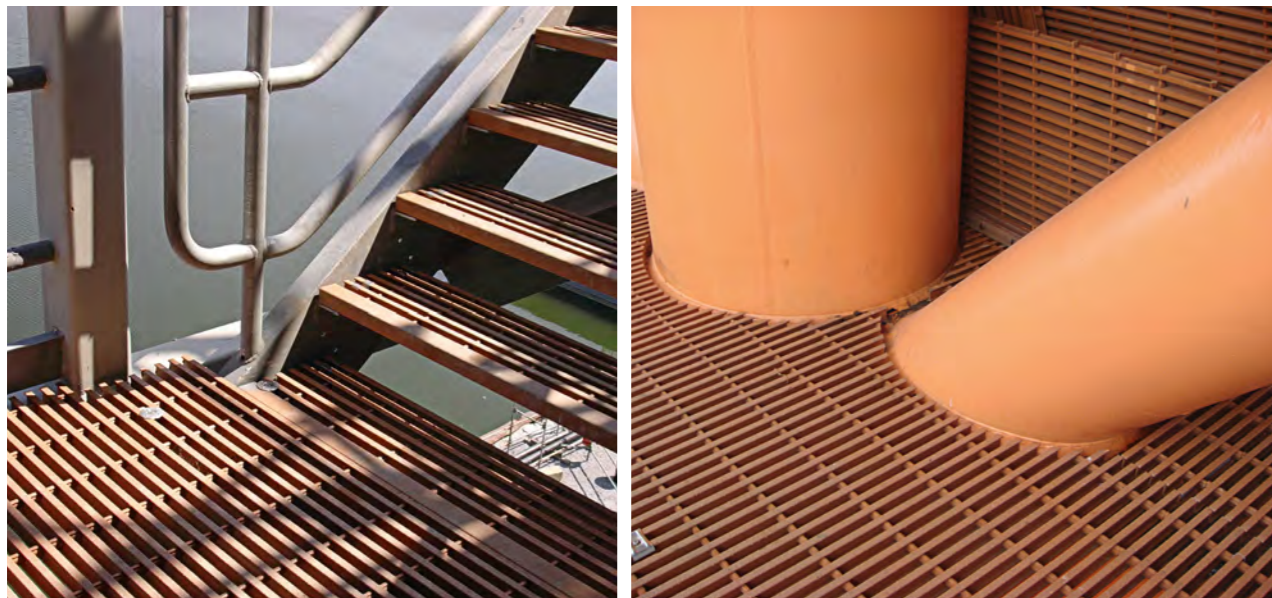
THE LICHTGITTER GROUP HAS BEEN INVOLVED IN GLASS-REINFORCED PLASTIC (GRP) PRODUCTS SINCE THE EARLY 90'S. OUR MANY YEARS OF POSITIVE EXPERIENCE IN THE USE OF GRP PRODUCTS HAVE MADE US WELL AWARE THAT GRP MATERIAL HOLDS DISTINCT ADVANTAGES IN A VARIETY OF LOCATIONS AND SITUATIONS.

In addition to our established range of GRP flooring designs, we have also added GRP construction profiles and related application possibilities to our catalogue. Our unique range of services supports and accompanied the customer from the earliest stage of engineering inclusive layout-design to necessary installation instructions. In order to ensure the consistency of the reliable high quality of our portfolio, all relevant standards for GRP products and associated services are to be strictly adhered to.

Lichtgitter has numerous subsidiaries, joint ventures with partners and Service Centers not only throughout Europe, but also worldwide. This national and international network allows a regular client communication and fulfils customer requirements in the most efficient and effective manner. This also allows the company to offer short term deliveries as well as to provide access to competent technical support staff.

Progress and innovation require high levels of foresight and responsibility. These are standards that Lichtgitter and its staff are fully committed to meeting and maintaining.

## OUR PRODUCTS IN USE



## UNIQUE PRODUCT FEATURES



### Chemical Resistance

With its special phenolic resin formula, the grating is resistant against many kinds of chemical materials on a splash and spill basis and with good housekeeping clean up. They are exceedingly resistant against sea water and salt water. In environments where highly concentrated substances can appear, the medium and its concentration should be reviewed.



### Fire Safety

GRP Phenolic Grating, compared to typical orthophthal, isophthal and vinyl ester GRP products, offers major improvements in reduced smoke density, reduced smoke toxicity and structural fire integrity when exposed to fire.



### Installation

GRP Phenolic Grating requires no hot-work or heavy equipment to install or make field modifications. The unique three piece cross-bar construction enables pultruded gratings to be cut like a solid sheet with simple hand tools – no need for banding as with metal grating.



### Load

If it comes to optimize the strength-to-weight ratio including fire protection the GRP Phenolic Grating offers a unique advantages. With the light weight nature of the different grating materials the grating can still carry comparable loads compared to established material.



### Temperature Behavior

The nonflammable nature of phenolics enable this grating to withstand higher temperatures than traditional GRP products for extended periods of time. In addition, the properties of pultruded grating improve in sub-zero areas.



### Conductivity

Pultruded gratings characterized very low electrical conductivity properties. Furthermore, they possess a very low thermal conductivity and thermal expansion to prevent "hot areas". However, it is possible to supply all GRP Phenolic Gratings with a black conductive surface which are amongst other necessary in explosion-proof rooms.



### Dimensional Stability

The glass mat in GRP Phenolic Grating distributes impact load to prevent surface damage, even in very high and sub-zero temperatures. It is able to return to its original shape after impact, the grating will not permanently deform. It stays flat for the life of the product and will not spark in the event of any tool droppage.



### Lifespan

In addition, to the easement of installation and simplicity of rework, the grating will not corrode or rot in any form as it is common by established material like wood or steel. Linked with that advantage, the grating can achieve a much longer durability so that the product life cycle costs will be much lower.

## CERTIFICATIONS



### US COAST GUARD / ASTM F3059-15

These phenolic pultruded grating is worldwide the only GRP grating, which meets the current norm of the US Coast Guard (level 2 (L2)) and the **ASTM F3059-15**. ASTM F3059 is the standard specification for fiberglass reinforced polymer (GRP) gratings used in marine construction and shipbuilding and the basis for U.S. Coast Guard (USCG) Type Approval for GRP grating. The ASTM F3059 standard is an enhancement to, and expected replacement for, the existing worldwide standards for fiberglass gratings (including **USCG PFM 2-98**).



Det Norske Veritas and Germanischer Lloyd (DNV-GL)

American Bureau of Shipping (ABS)

Lloyd's Register (LR)

Bureau Veritas (BV)

Nippon Kaiji Kyōkai (ClassNK)

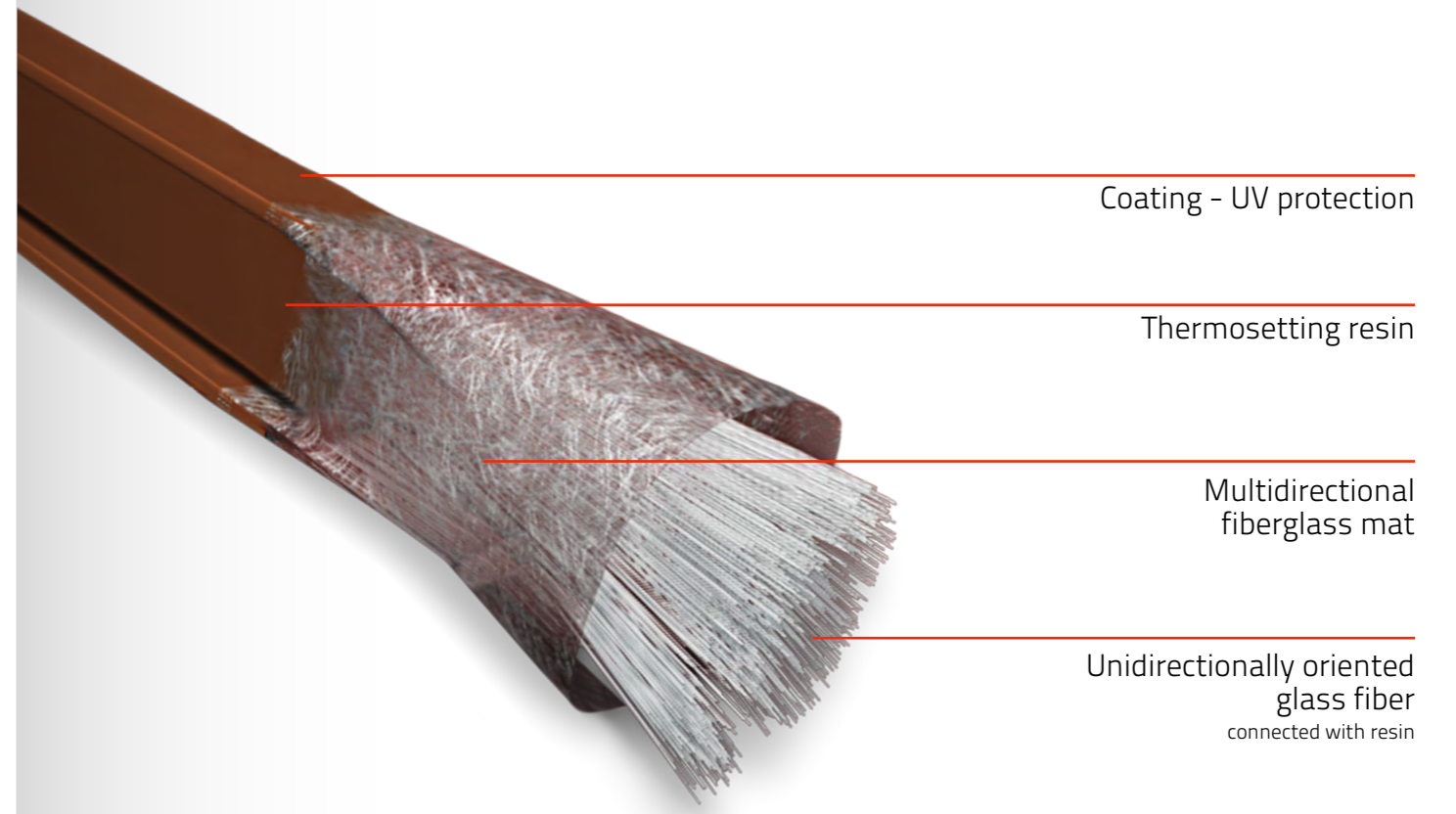
### IMO

Furthermore, it fulfills IMO requirements of Resolution MSC.62(67) as well it is also listed in the IMPA-catalog (67-38-21).



## CONDUCTIVE EXECUTION

All GRP Phenolic Grating variations can be supplied in a conductive execution. The basic of this special execution type is the normal GRP Phenolic Grating. After the production of the grating, the grating will be equipped with a black coating. This coating contains graphite powder. The graphite powder generates the electrical conductive characteristic.



Coating - UV protection

Thermosetting resin

Multidirectional fiberglass mat

Unidirectionally oriented glass fiber connected with resin

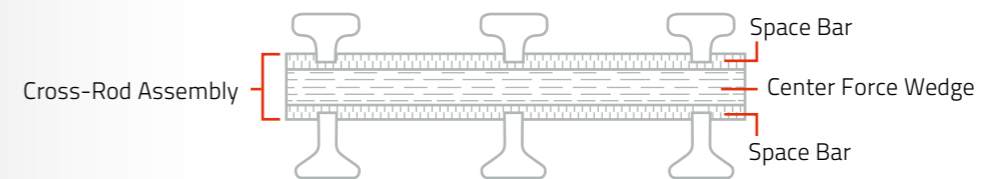
## PRODUCT DESCRIPTION

PULTRUDED FIBERGLASS GRATINGS ARE A COMPOSITE OF FIBERGLASS REINFORCEMENTS (FIBERS AND MAT) AND A THERMOSETTING RESIN SYSTEM, PRODUCED BY THE PULTRUSION PROCESS. THE PULTRUSION MANUFACTURING PROCESS PRODUCES MANY OF THE UNIQUE CHARACTERISTICS OF THE PRODUCT.

The bearing bars use both longitudinal (glass roving) and multidirectional (glass mat) reinforcements. The densely packed core of continuous glass rovings gives the bar strength and stiffness in the longitudinal direction while the continuous glass mat provides strength in the transverse direction and prevents chipping, cracking and

lineal fracturing. The phenolic resin provides resistance against corrosion as well as the coated surface protects the gratings against UV-radiation. Furthermore, the anti skid surface produces an optimal steadfastness of R13 according to DIN 51130.

## CROSS-ROD ASSEMBLY

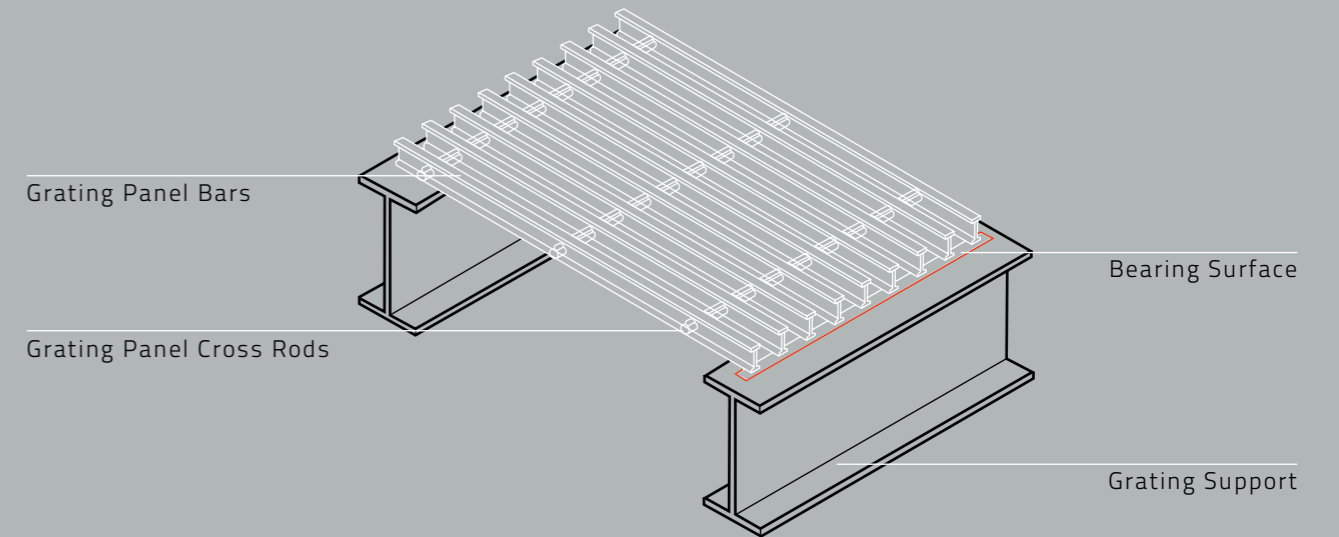


The 3-piece cross-rod assembly used in pultruded grating forms a strong, unified panel that can be cut and fabricated like a solid sheet. This unique system consists of two continuous, pultruded spacer bars and a center core wedge. The spacers are notched at each bearing bar so that the bars are both mechanically locked and chemically bonded

to the web of each bearing bar. This separates and affixes bearing bars firmly in position and distributes concentrated loads to adjacent bars. The resulting panel can be easily fabricated with standard carpenters' tools with tungsten/diamond cutting edges. Ask for the detailed Grating Field Fabrication Guide for further details.



## MODELS



When specifying GRP pultruded grating, ensure the bearing bars for installation will be oriented in the correct direction for the application. Bearing bars shall traverse from support to support. Cross-rods are not intended to be applied in the span direction. The adjacent drawing will help specify the width and length of panels.

**+** Width is the measurement from end to end of the cross-rods. Length is always the bearing bar length.

### TYPE EXAMPLE

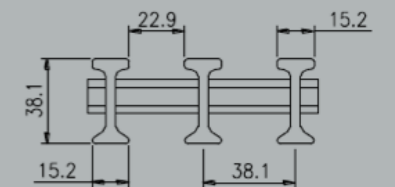
#### TYPE: GRP-P38 I6000

GRP = glassfiber reinforced plastic  
 38 = height  
 6000 = 60% open space

P = phenolic  
 I = Beam

**+** The exact type can be traced according the Lichtgitter product code.

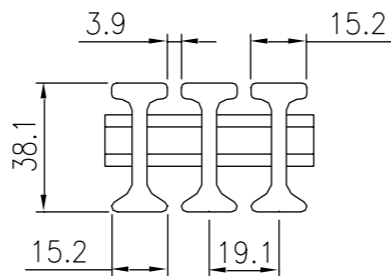
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-6000	38.1	26.25	38.1	22.9	60	14,65 kg Per Sq. Meter



**GRP-P38 I2000**

38 = height P = phenolic  
2000 = 20% open space I = Beam

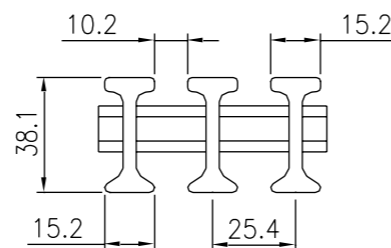
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-2000	38.1	52.49	19.1	3.9	20	33.6 kg Per Sq. Meter



**GRP-P38 I4000**

38 = height P = phenolic  
4000 = 40% open space I = Beam

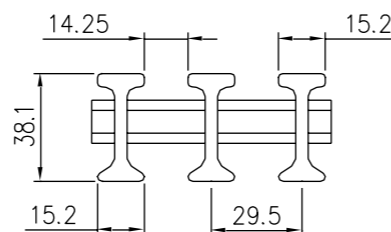
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-4000	38.1	39.37	25.4	10.2	40	25.19 kg Per Sq. Meter



**GRP-P38 I4800**

38 = height P = phenolic  
4800 = 48% open space I = Beam

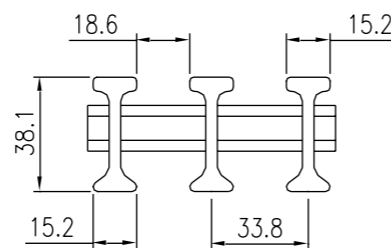
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-4800	38.1	33.90	29.5	14.25	48	21.7 kg Per Sq. Meter



**GRP-P38 I5500**

38 = height P = phenolic  
5500 = 55% open space I = Beam

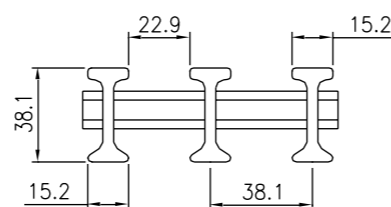
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-5500	38.1	29.60	33.8	18.6	55	18.89 kg Per Sq. Meter



**GRP-P38 I6000**

38 = height P = phenolic  
6000 = 60% open space I = Beam

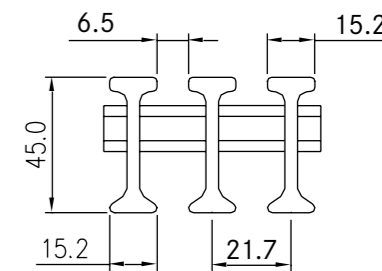
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-6000	38.1	26.25	38.1	22.9	60	16.79 kg Per Sq. Meter



**GRP-P45 I3000**

45 = height P = phenolic  
3000 = 30% open space I = Beam

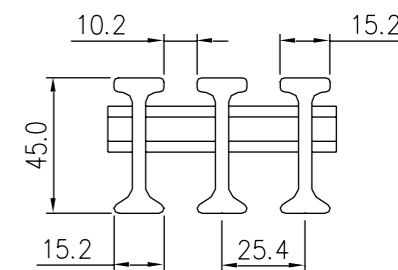
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-3000	45.0	46.08	21.7	6.5	30	33.71 kg Per Sq. Meter



**GRP-P45 I4000**

45 = height P = phenolic  
4000 = 40% open space I = Beam

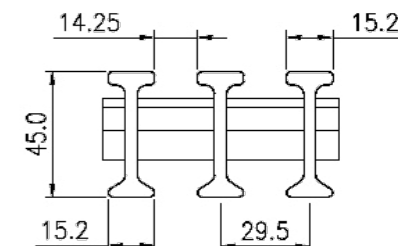
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-4000	45.0	39.37	25.4	10.2	40	28.8 kg Per Sq. Meter



**GRP-P45 I4800**

45 = height P = phenolic  
4800 = 48% open space I = Beam

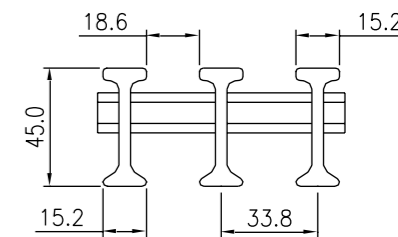
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-4800	45.0	33.90	29.50	14.25	48	24.60 kg Per Sq. Meter



**GRP-P45 I5500**

45 = height P = phenolic  
5500 = 55% open space I = Beam

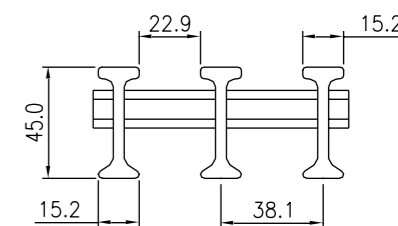
Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-5500	45.0	29.60	33.8	18.6	55	21.42 kg Per Sq. Meter



**GRP-P45 I6000**

45 = height P = phenolic  
6000 = 60% open space I = Beam

Series	Bearing Bar Thickness	No bars Meter Width	Bearing Bar Center	Open Space	% Open Area	Approx. Weight
I-6000	45.0	26.25	38.1	22.9	60	19.04 kg Per Sq. Meter



## REFERENCES

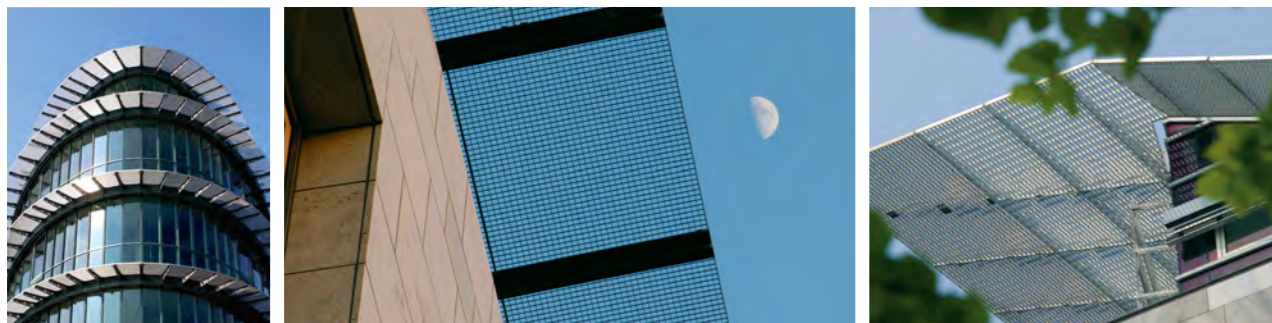
### FACADES



### CEILING COVERINGS



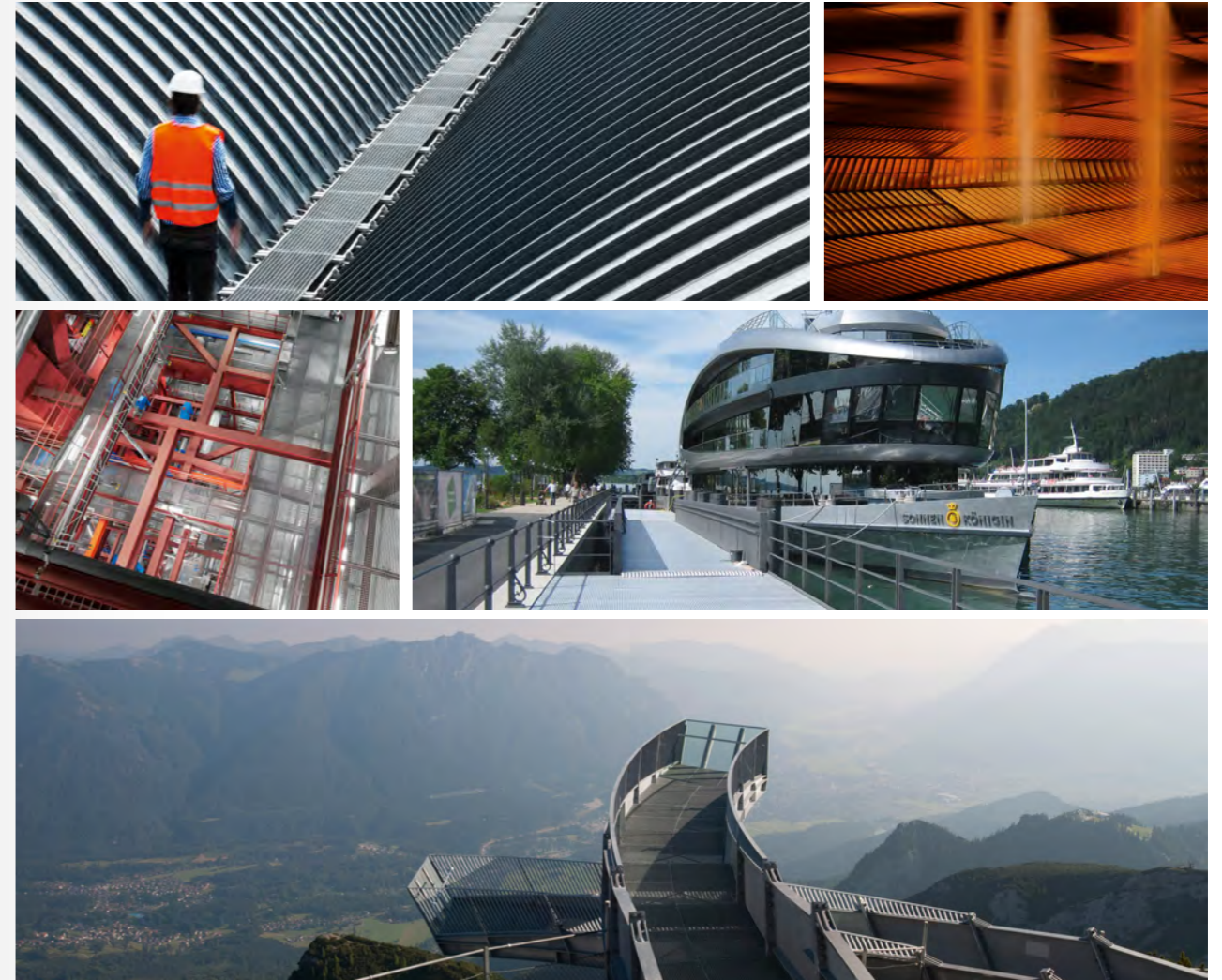
### SUN PROTECTION



### STAIRS AND RAILINGS



### FLOOR COVERINGS/WALKWAYS



## LICHTGITTER – ABOUT US

### A BRIGHT OUTLOOK SINCE 1929

Lichtgitter was established in 1929 in order to carry out the specialized manufacturing of gratings. By the continuous monitoring of our performance, and quality systems, together with innovation in manufacturing techniques, we have ensured Lichtgitter's place in the forefront of manufacturers of industrial floor coverings with subsidiaries all over the world. Besides the production of pressure-locked

gratings, forge-welded gratings and perforated metal planks, a various offer of GRP products are part of the production range. Our current product range also includes profiled chequer plates, spiral staircases, stairtreads and ladder rungs. Together with our steel slitting service centre and hot dip galvanizing plants we provide a complete fabrication facility to our customers.

## EVERYTHING FROM ONE SOURCE:

forge-welded gratings, pressure-locked gratings,  
perforated metal planks, GRP-gratings, combi-deck,  
chequer plates, spiral staircases, staitreads,  
ladder rungs, hot-dip galvanisation, steel service

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