



**Rail Sector**  
You define, we deliver

# Our portfolio for Exterior Parts





### 1 Windscreens

- With heating options
- With framing options
- According to EN15152, UIC 651, FRA CFR49

### 2 Front and signal light glass

- With heating options
- Different materials available

### 3 Cab-side windows

- With framing options

### 4 Windows for driver doors

- According to EN14752

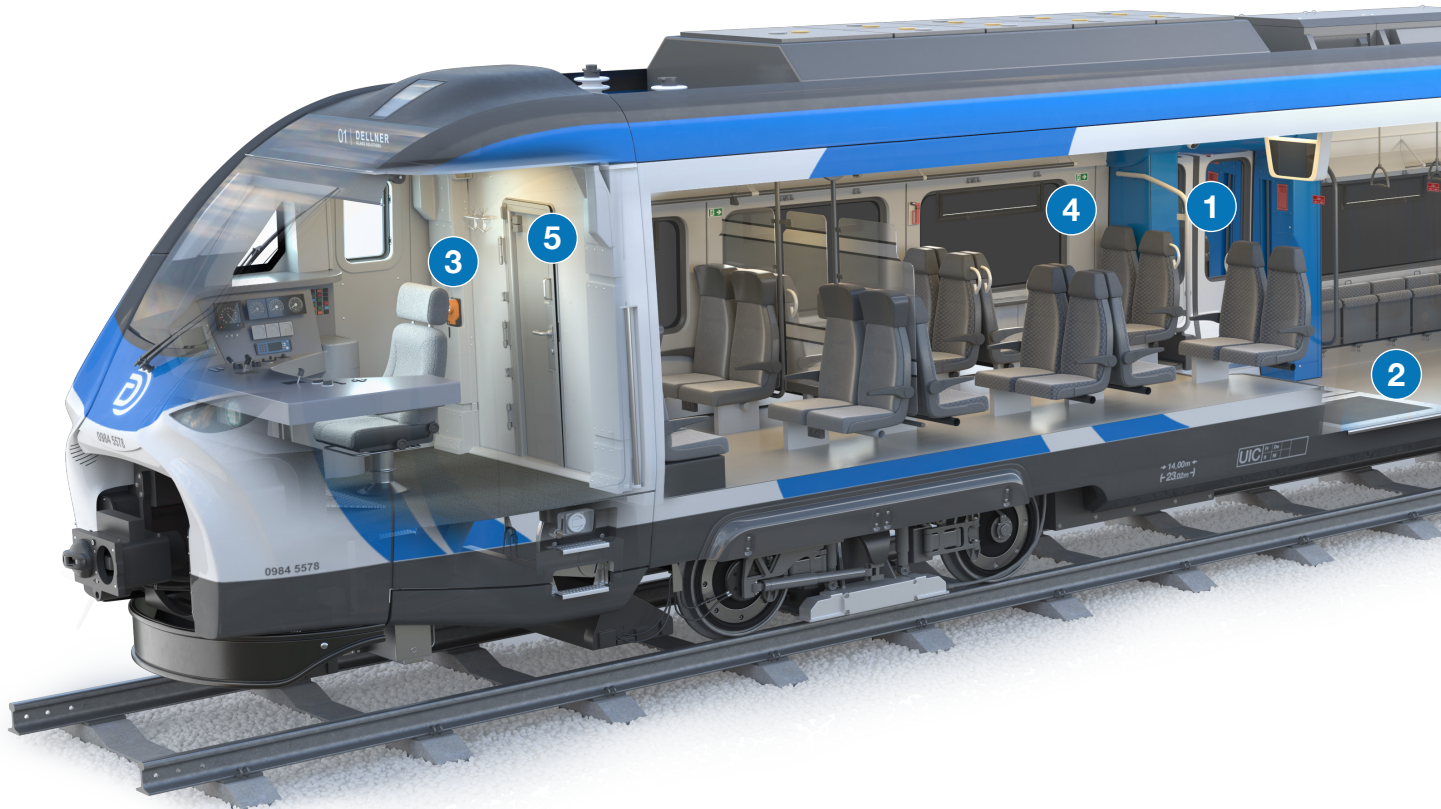
### 5 Body side windows

- According to EN22752 and GM/RT2100

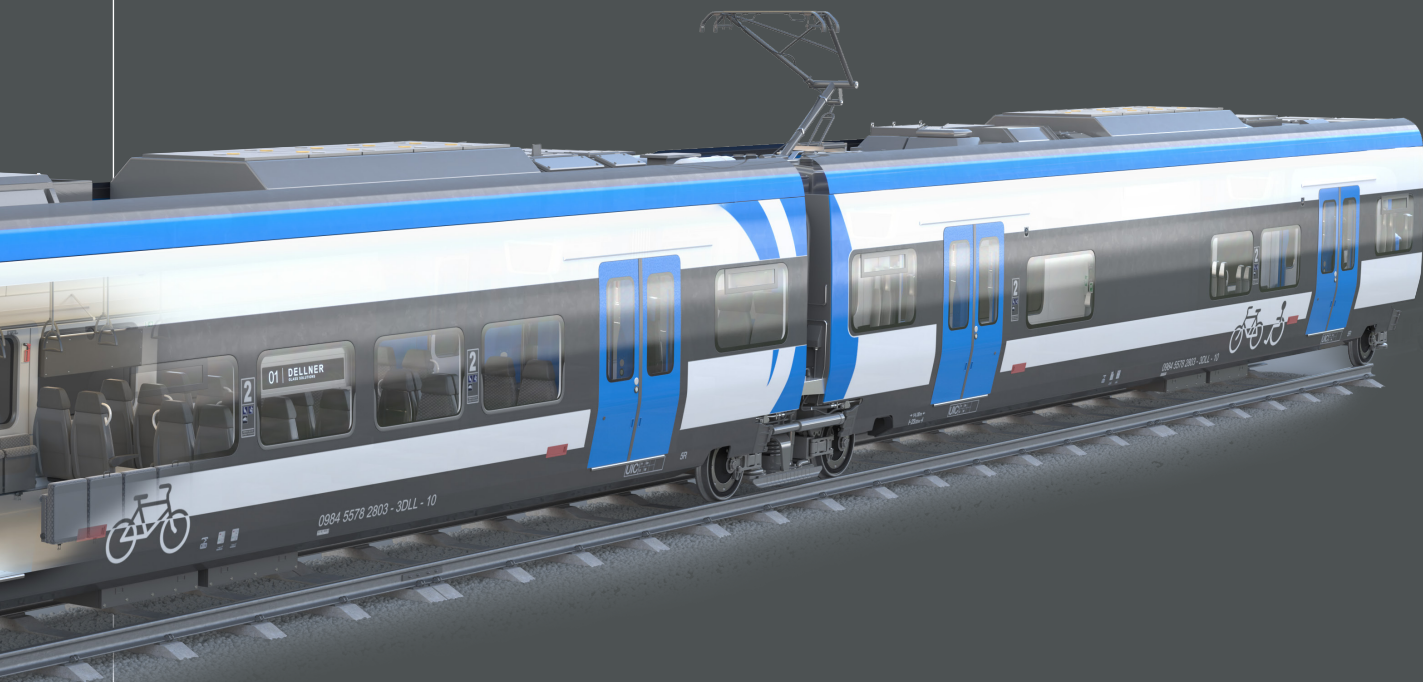
### 6 Sideskirts

- In-house powdercoating, welding and bonding
- EN15085 (CL2), EN17460 / DIN6701 (A1)

# Our portfolio for Interior Parts







### 1 Grab poles

- With coating options
- Pre-assembled

### 2 Flooring systems

- Multiple surface materials available
- With heating options

### 3 Partitions

- Aluminium, steel and different surface materials available

### 4 Luggage racks

- Aluminium and glazing options available

### 5 Manual doors

- Hinged doors for partitions, cabs and emergency exits

...and other structural parts built to print.

# Windcreens Comfort for drivers

## Safe and comfortable place to work

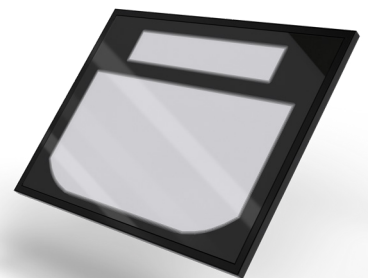
- To protect from sunrays (UV) and other reflections
- Heat/cold protection – insulation and reflection of thermal power
- Low-e coating - absorption or reflection of heat in summer
- High visual optical quality of glass and final product
- Acoustic comfort – reducing external noise



# Windcreens

## Safety for drivers according to EN15152

- Impact resistance for all speed categories
- Splinter protection to meet the highest safety requirements and protect the train driver in all circumstances
- Heating with modern coatings or wires available
- Visual optical quality of glass to enable better eyesight of track and environment
- Innovative frame systems speed up the replacement of glazing, in turn reducing costly downtime
- In-house laboratory for testing
- EN17460/DIN6701-A1 bonding



# Body side windows

## Comfort and safety for passengers

Passengers can enjoy a comfortable ride

### Our solutions

- Several low-e coatings to protect from heat and cold radiation
- Insulation and reflection of thermal power (back to passengers inside at winter)
- Acoustic comfort – reducing external noises
- With or without hopper windows
- Different framing options available (bonded, clamped, two-part)

### Compliance and certifications

- EN22752
- EN17460/DIN6701 A1 for bonding
- EN15085 CL2 for welding







# Body side windows Connectivity for passengers

Passengers can connect safely and reliably to the network

## Our solution

- Windows traditionally contain an ultra-thin metal coating to improve thermal insulation (U-Value) –this creates a Faraday cage where mobile network signals do not passthrough and the operator needs to install a lot of repeaters inside the coaches
- Solution: very thin lines are ablated by laser to create a path for mobile signal transmission

## Compliance

- EN22752
- GM/RT2100
- EN17460/DIN6701 A1 for bonding
- EN15085 for welding

# Cab windows and doors

## Safety and optical performance

### Cab-side windows according to EN22752 and other standards

- Low-e and antireflective coatings for avoiding glare
- Electrical dimming as option available
- Framing systems or no framing systems options

### Cab-back walls and doors according EN14752 and other standards

- Different material concepts available, depending on requirements
- Type testing in-house and external laboratories for pressure wave testing
- Locking solutions according to customer requirements available
- Options for door holders and closing devices available upon request
- Several different glazing options available, including bullet and impact proof





**DELLNER**  
Glass Solutions

+14,00m  
+23,62m

UIC

1

2



# Interior fabrications Versatile in-house production

## **Versatile in-house production to serve built to print or engineer to order projects**

Aluminium, honeycomb/composite structures, covers (bent and flat), stainless steel and plastic fabrication capabilities

## **50 years experience on railway interior fabrications**

In-house operations like machining, sheet metal production, welding, bonding, powder coating and wet painting

## **Optimisation of existing designs for design to cost activities**

In co-operation with the customer, utilising our global supply chain to find optimised solutions

## **Typical products include grab poles, holding bars, trash bin, ceiling covers, air ducts, luggage racks, door pillars**

Ask our sales for references and capabilities



# Flooring systems

## Modularity and comfort

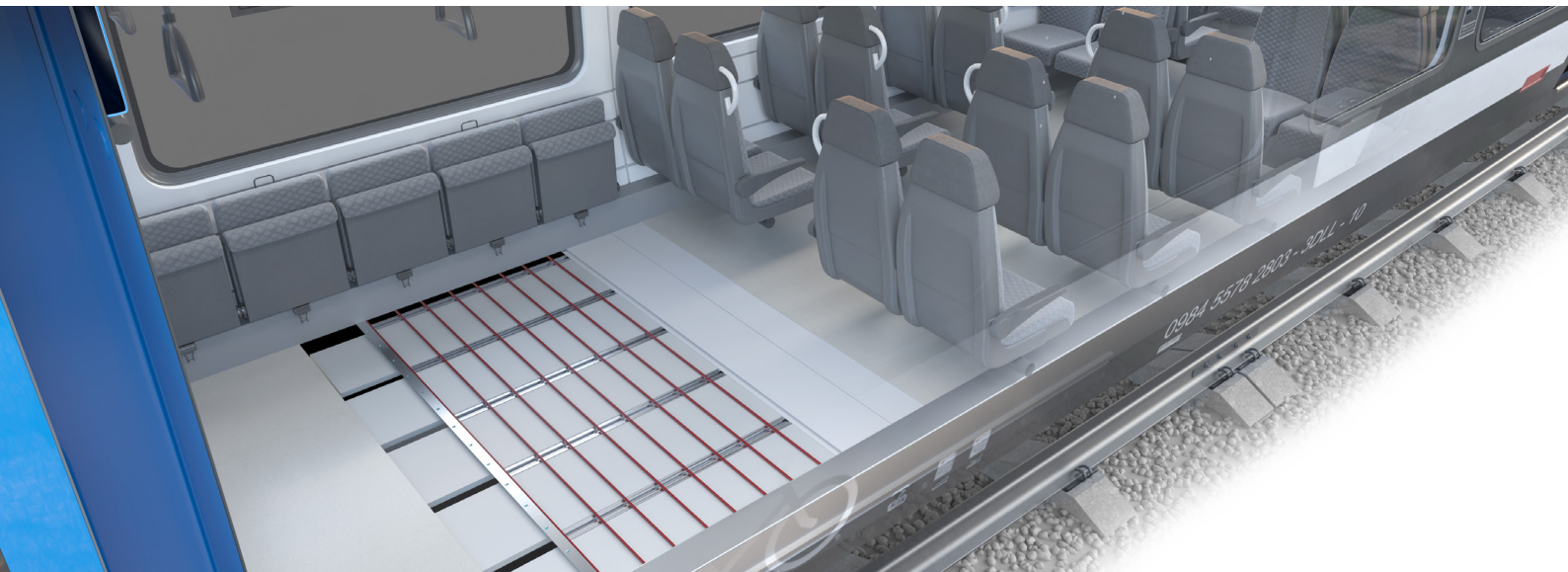
**Dellner flooring systems are designed to be modular**

### In practice

- Aluminium extrusions designed with internal cores to act as carriers for the heated cable system.
- The heat cables will run inside the extrusions, along the car length, looping round and into the next core, creating a continuous weave inside the floor assembly.
- Each sub section of flooring has one complete cable run with each end of the heat cable having a termination socket (IP67 rating) is hard wired, the connection at each end of the cable within the flooring sub-section ensures power is distributed in opposing directions through the cable, which benefits the system in the event of a break or failure in the cable, ensuring the power is lost only at that point.

### Customisation

- The floor covering can be any material available on the market, according to customer requirements



# Emergency exit systems

## Safety in case of emergency

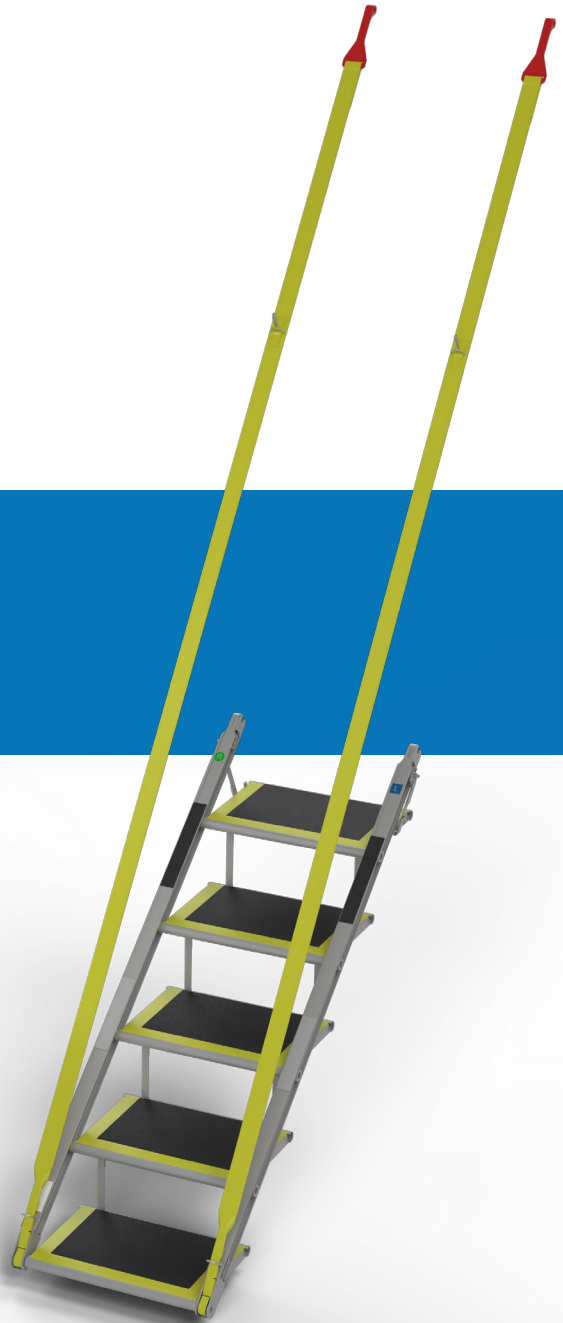
### Emergency exit doors

- Emergency exit door works as an emergency route from the ends of the trainset
- Flat or bent structures available
- Customisable design
- Locking systems available based on customer requirements
- Robust structures – steel and aluminium frames and skins available with customised design
- Insulated glazing unit (flat and bent) with impact resistance according to customer requirements
- Sensors for indication of door and locking system status



## Emergency exit ladders

- Emergency exit ladders for passenger evacuation according to customer requirements and standards



# Dellner Glass Solutions we work with you, every step of the way

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