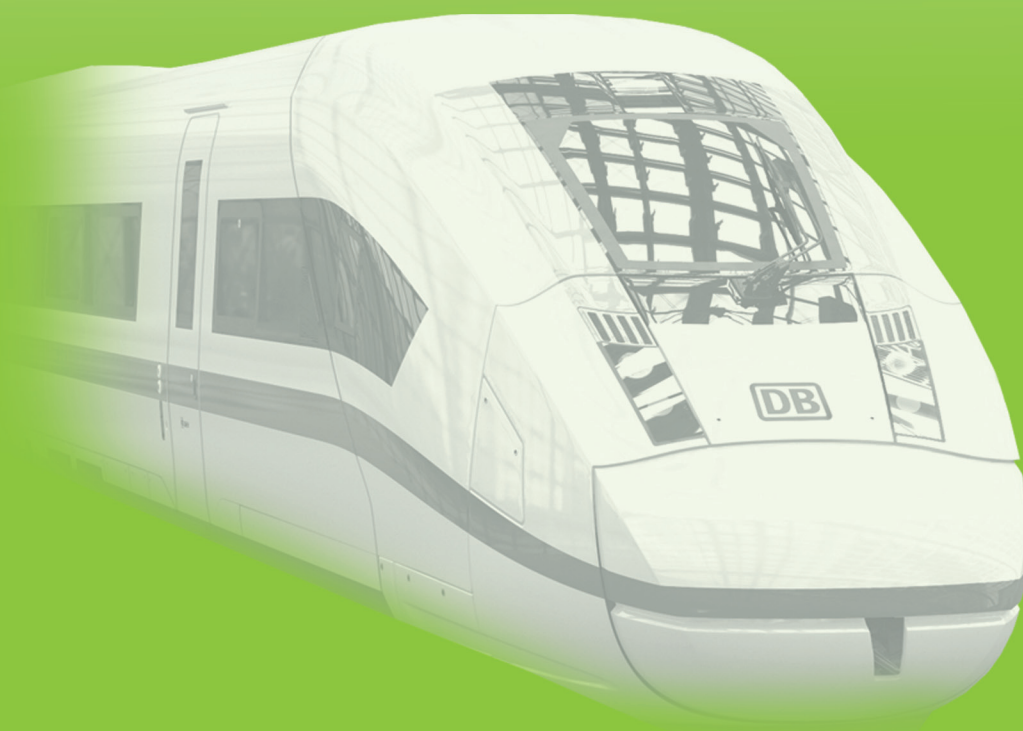
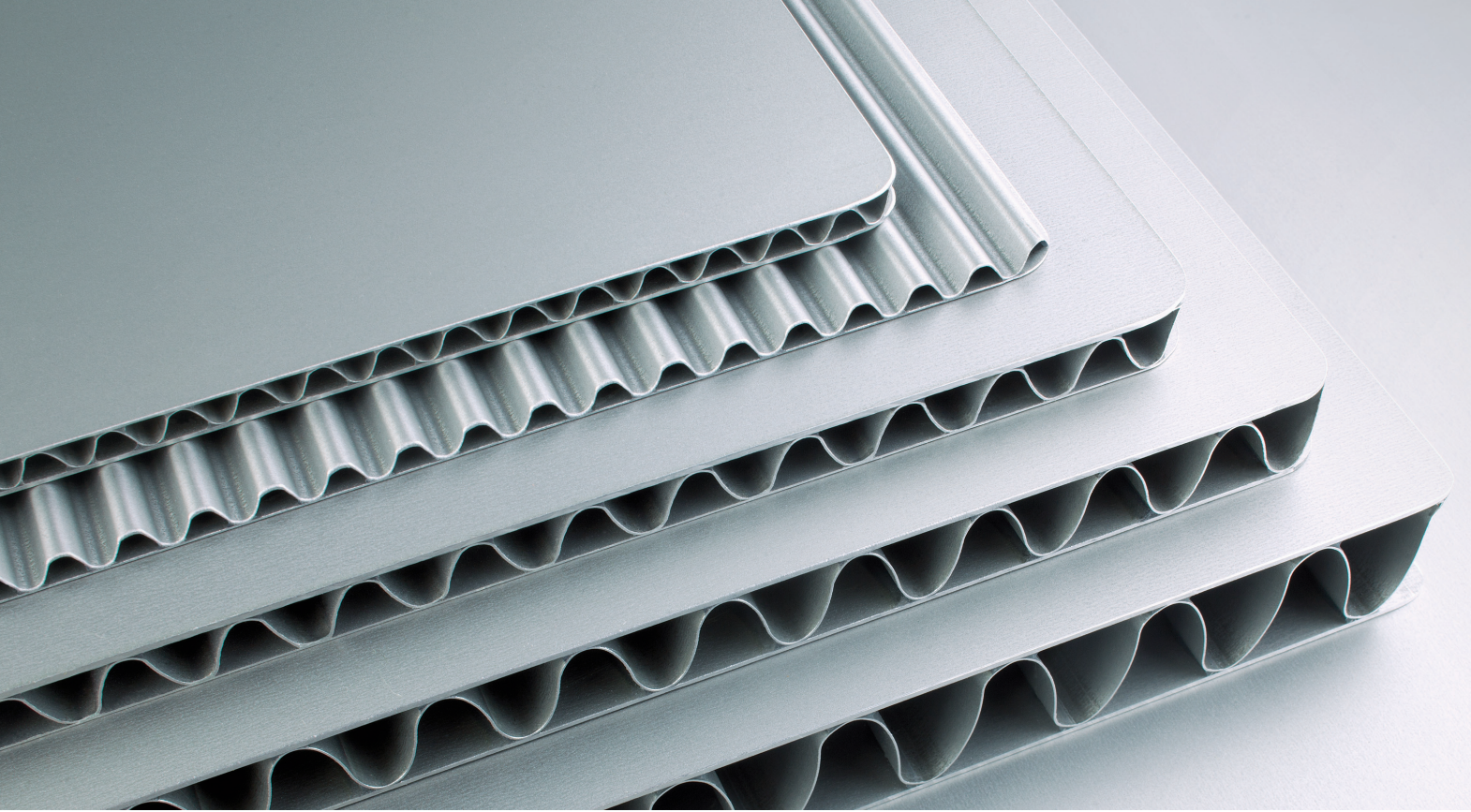




Rail Vehicle Applications





Selection of different Metawell® panels and Metawell® Aluflex

Metawell® at a glance

Advantages of Metawell®:

- high rigidity combined with low weight
- small overall panel thickness
- big formats and form stability
- even and attractive surfaces
- various alternatives for cover sheets and corrugation, adjusted to the customer requirements
- Metawell® Aluflex for curved sandwich constructions
- sound attenuation characteristics
- fire rating following e. g. EN 45545, DIN 5510, GOST R
- easy processing and recycling
- numerous possibilities for design (coating, painting, film application, digital printing, powder-coating on request etc.)
- panels, tailor-made elements or pre-finished components
- certified acc. DIN 6701-2 for adhesive bonding of class A1
- long-time experience

Applications in tramways and trains (high speed, regional transport and mass rapid transit):

- large-sized ceiling elements (flat or curved)
- partition walls
- seating structures
- tables, racks
- curved interior elements
- reinforcements
- floor panels (heated/unheated)
- access aids (such as ramps, sliding-steps or lift-systems)
- inspection hatches (e.g. in floors or ceilings)
- exterior cladding and casings



Metro New Delhi (Bombardier) – Metawell® floor panels

Rail Vehicle Applications

EXPERIENCE AND COMPETENCE

Since the mid-eighties Metawell® panels have been very successfully used for various applications in high speed trains, coaches, metros and tramways. The light aluminium sandwich panels meet, in an ideal way, the constantly increasing demands made on all materials employed with regard to weight, rigidity, possible surface designs and fire behaviour.

With Metawell® planners and designers have a highly performing material, which can be adjusted to an optimum to the various applications in rail vehicles and which offers both economically and technically convincing solutions.

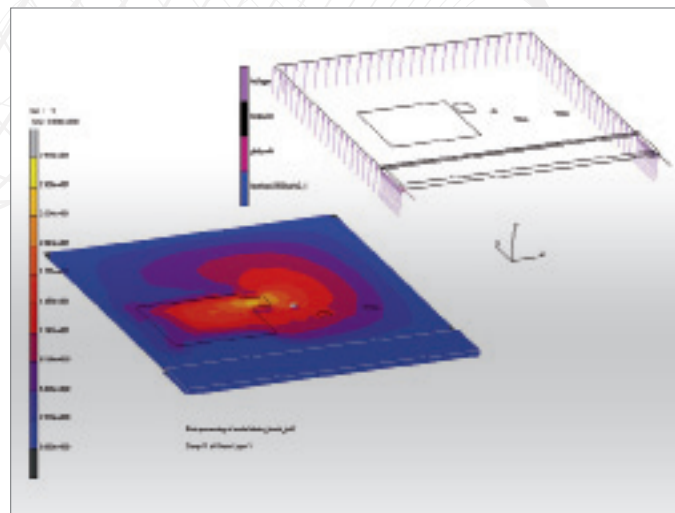
The supply range covers panels in numerous dimensions and designs as well as machined or pre-finished components, which allows for an individual adjustment to the costumers` requirements.

A team of engineers helps you to find the best solution for the technical and cost-effective implementation of your projects.

CERTIFICATES AND APPROVALS

Metawell is certified acc. DIN EN ISO 9001:2008, DIN EN ISO 14001:2004, DIN 6701-2 A1 (for adhesive bonding of Class A1 rail vehicles and rail vehicle components) and IRIS.

As aluminium sandwich panel Metawell® complies with several fire rating standards (e.g. EN 45545, DIN 5510, GOST R).



Engineering at Metawell GmbH using FEM calculations



Velaro RUS (Siemens) – Metawell® ceiling elements

CEILINGS AND WALLS

Metawell® panels are perfectly suited for use in walls and ceilings. Thanks to their high stiffness and their low weight the number of anchorage points can be minimized. With the possibility of hidden fixtures (e.g. blind rivets) and various options for the edge finish the scope of design is wide. Lights, air exits etc. can be integrated without difficulty. And for the surface styling, there are numerous possibilities by coating, laminating or painting the panels (powder-coating on demand). With the product Metawell® Aluflex especially curved components with an amazingly low weight and a high rigidity can be easily fabricated.

FLOOR SYSTEMS (HEATED/UNHEATED)

Particular requirements have to be fulfilled by floor panels: they have to tolerate high surface and extremely high point loads (caused by high heels), they have to be rigid in order to reduce the supports, they are expected to have sound attenuation qualities and must be light but strong enough to get components attached (e.g. poles). Particularly for these demands Metawell® has developed sandwich panels which, besides the high strength in the cover sheets, show also an extremely high strength in the core material.



FLIRT SNTF Algeria (Stadler) – Metawell® for access aids (Bode)



Shinkansen (JR) – Metawell® panels for ceilings, walls and racks



Exterior cladding Metro St. Petersburg, Skoda



London Subway – Metawell® panels for seats (Beamlight Automotive)



Avanto/S70 San Diego (Photo Siemens) – Metawell® for sliding steps

EXTERIOR CLADDING AND CASING SYSTEMS

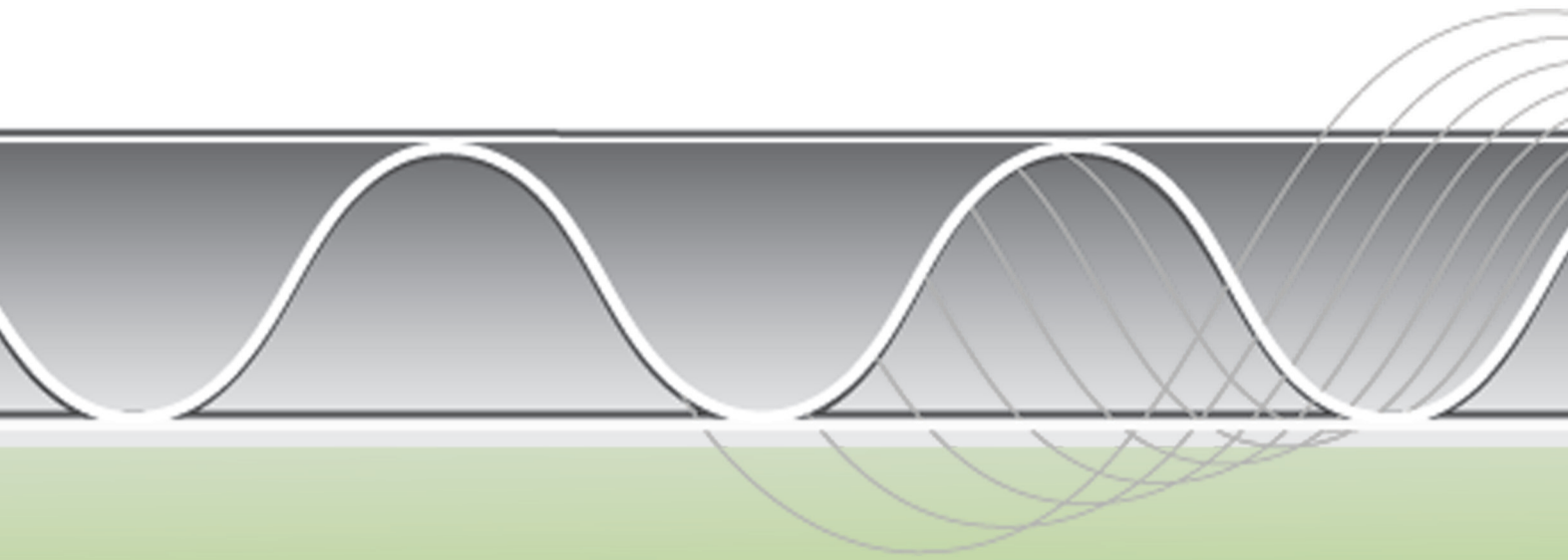
The aluminium sheets out of which Metawell® sandwich panels are made have a corrosion-protection primer on both sides (the interior and the exposed side), even the core material. Thus the panels commend themselves also for external applications in rail vehicles as e.g. for encasements and linings.

INTERIOR

High rigidity, low weight and a small overall thickness make Metawell® panels an ideal material for tables, seatings and racks. The particular requirements regarding stability (against vandalism) and fire performance are also met to a high degree.

ACCESS AIDS

Especially the entrance areas of vehicles for mass rapid transit are highly stressed. Metawell® panels, used for ramps, sliding steps (including cover plates) or lift systems, are tried and tested a thousand times.



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