

RAIL

LIGHTWEIGHT INTERIOR AND DOOR SOLUTIONS

Through design,
validation and
manufacturing

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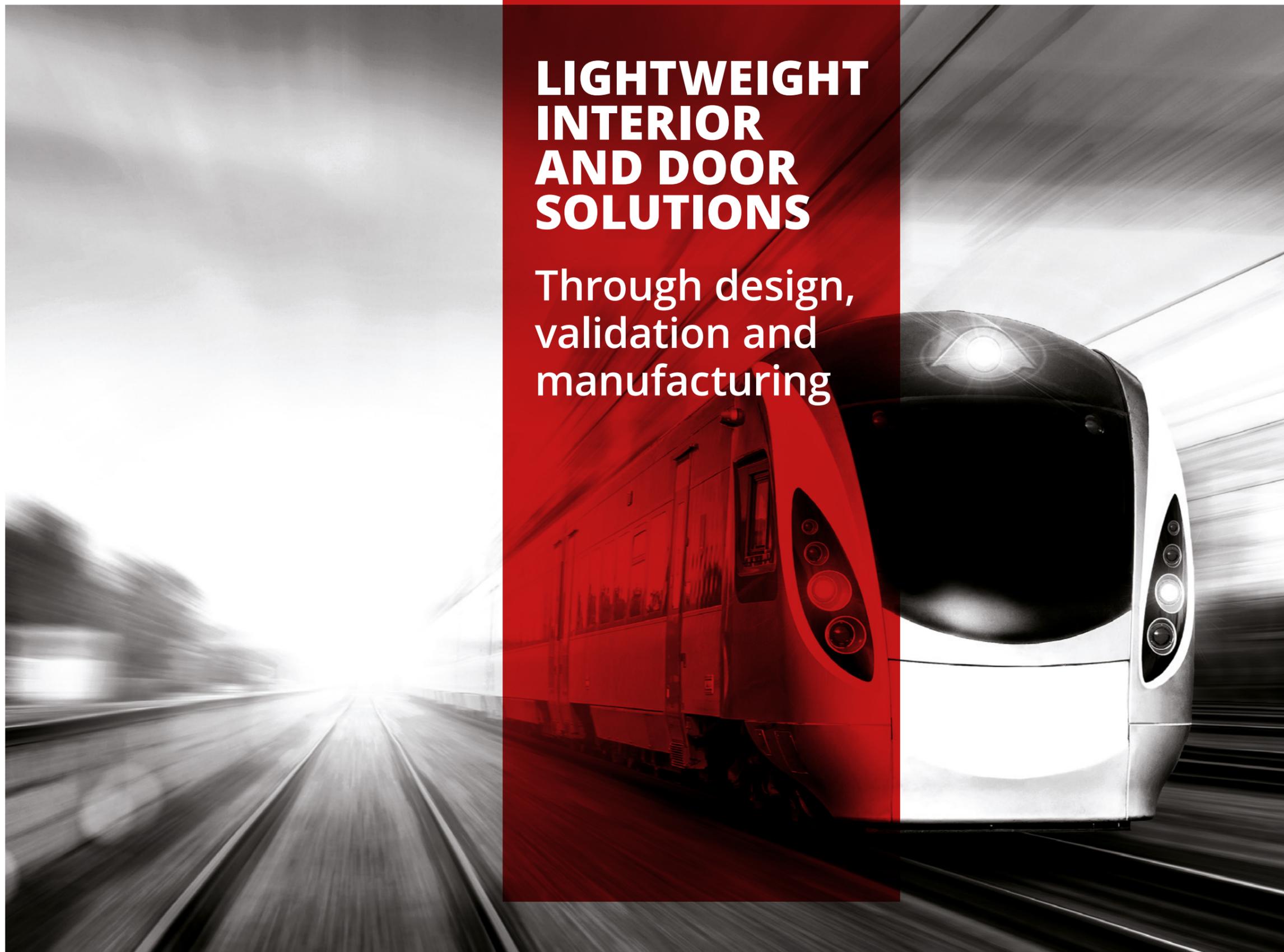
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ABOUT US

TRB is passionate about reducing weight in the transport industry as lighter rail vehicles require less power which leads to our ultimate goal of delivering a positive impact on the environment.

This value is at the heart of our business, we believe in accountability and care how we affect the environment around us, both locally and globally.

IRIS and ISO approved, TRB Lightweight Structures has over 60 years experience in the design and manufacturer of high-quality rail interiors, door leaves and detrainment systems.

We work closely with our customers to design, validate and manufacture products that can stand up to demanding rail environments over the life of the vehicle.

Our knowledge of composite materials along with our bonding and fabrication expertise allows us to carefully select the correct combinations of materials to provide the necessary results and performance for the application.

As our finished products are designed not only to be durable over the vehicle life cycle, but lightweight, this leads to lower energy consumption, less wear and tear on tracks and reduced maintenance programs, the combination of which is of all round benefit to the environment.

Our understanding of rail standards and the relevant requirements ensures a smooth development and approval process.

With facilities in the UK, Europe and USA, we are able to maintain quality and deliver finished products to an exceptionally high standard.



OUR WIDE RANGE OF RAIL INTERIOR FITTINGS & DOORS

TRB has a long track record of building high quality rail interiors, working closely with our customers to design, build and test products.

Our range of rail products includes:

- Integrated Ceiling Systems
- Storage Modules
- Luggage Racks/Stacks
- Composite Handrails / Grab Poles
- Side Ceilings
- Cabinets
- Shelving
- Cab Back Walls and Fire Doors
- PRM Toilet Modules
- Bio Composite Door leaves
- Specialist Detrainment Door Systems
- Internal Doors (toilets & gangway)
- Floors
- Galleys
- Partitions
- Tables
- Train Managers Office
- Catering Units



WE DESIGN, VALIDATE, MANUFACTURE AND ENGINEER

Design

At TRB we have a team of experienced CAD design engineers who design a range of components and structures taking your ideas from concept through to reality. We specialise at making things lighter, stronger, and more efficient.

Provide us with a high-level requirement, an initial design to improve or a structure that requires reverse engineering and we can consult, design, validate and build structures to meet your need.



Manufacture

We are IRIS & DIN 6701 certified to ensure that our manufacturing, testing and validation services meet the highest level of quality for the application.

Whether low volume or large scale production, our manufacturing principles deliver consistently high quality product within short lead times. If issues do arise then we are responsive and pride ourselves on our speed to resolution.

We will give you a reliable, rapid, repeat supply at a volume suited to you, giving you the assurance that you can deliver quality products to schedule.



Validation

We provide in-house validation and testing, by using complete FEA analysis, physical load tests, mock-up manufacture, prototype build and cyclic testing this helps ensure reliability and safety.

Physical test data helps define properties and initial conditions for analysis.

In-house validation:

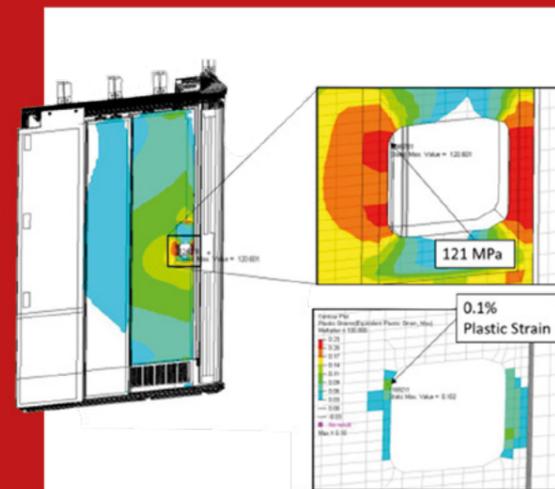
- Finite Element Analysis (FEA)
- Cyclic Testing and RAMs analysis
- Static Load Testing (GM/RT 2100 rev 5)
- Ingress Testing (IPXX) or BS EN: 14752:2015
- Fire Testing to EN45545

Materials

Utilizing our experience and knowledge in composite design for the rail industry, we will help to select the appropriate materials for your application. Consideration will be given to weight, strength, durability, material performance and manufacturing requirements. We will discuss these options with you so that we can arrive at the best solution for the project.

Our expertise spans composites, high-strength metals, cores and adhesives, as well as standard aluminium and steel fabrications.

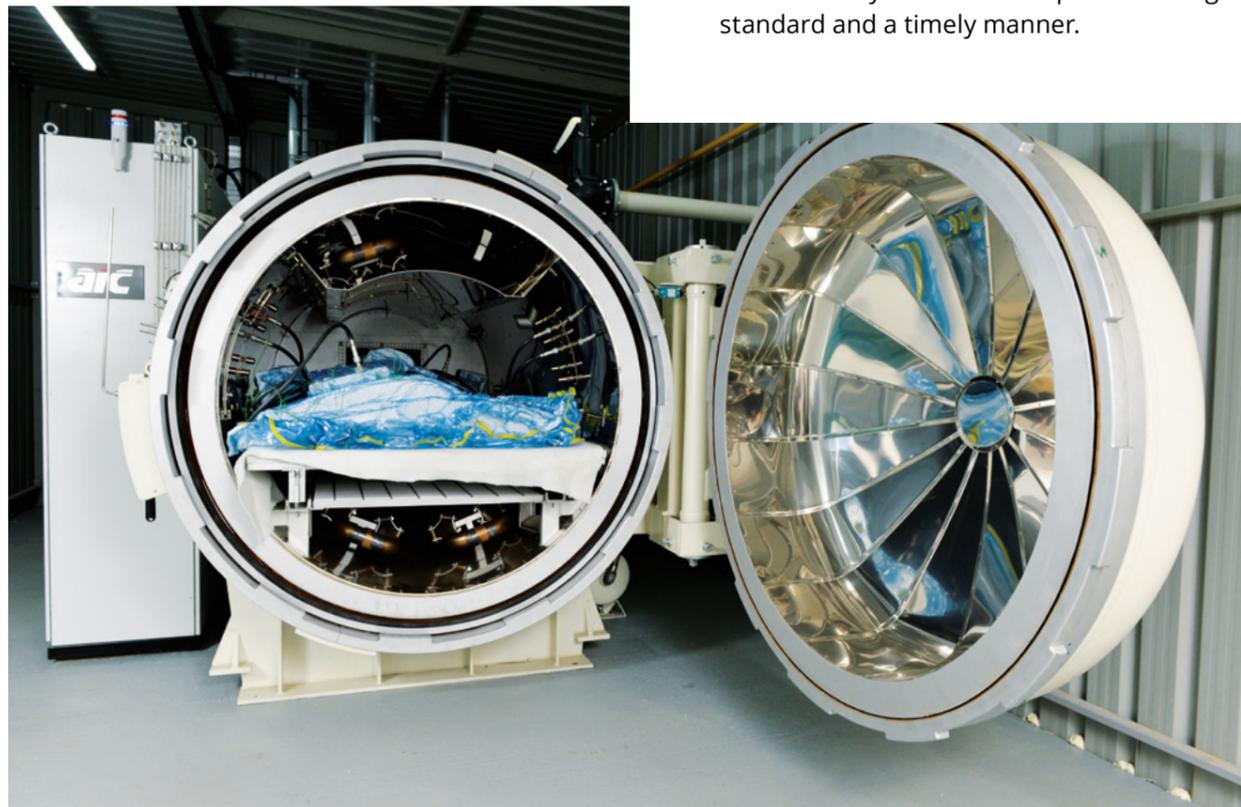
We focus on materials with a high strength to weight ratio, enabling you to improve the train's operating efficiency whilst maintaining a solid, durable interior structure with a high quality finish.





FACILITIES

With state of the art painting facilities (approved by Trimite and Dupont), high-performance autoclave, 3 and 5 axis CNC machining centre, a cleanroom for composite production (ISO 14644 Class 8) and 3D modelling with FEA, we are well equipped to deliver all your interior requests to a high standard and a timely manner.



Huntingdon Plant List

- Autoclave
- 5 High Temperature Multi Daylight Presses (300°C)
- 2 Ovens (for Vacuum curing)
- 2 Three Axis Routers 3m x 1.5.
- Pre treatment facility for aluminium etching
- Altendorf NC panel saw
- Holz Her Vertical panel saw
- Honeycomb block saw
- Honeycomb expander
- Adhesive / prepreg kit cutting machine
- Class 10,000 clean room
- Wet spray paint booth (inc drying oven)
- Test lab (inc FAR Bunsen Burner, Smoke Chamber, Heat Release chamber and Instron 5969)

Peterborough Plant List

- Trumpf TruLaser 5030 L16, CO2 type, 1.5x3m table with sheets loader, 2 tables, 5000W laser
- Trumpf Trubend 3100 Press Brake – max length = 3m. max force 1000 kN 5 axes
- 5 Axis Milling centre ARES 3618 PX5, Y = 1,800, X = 3,600, Z = 1,200, accuracy 0.065 24 tools saw blade, mist sprayer, grid vacuum table
- Pemsarter Series 4, Press with 53.4Kn/12,000 lb insertion force 457mm/18" throat depth
- Wet spray paint booth and extraction area

PROJECT CASE STUDIES



Hitachi Class 800

TRB won a multi-year contract to design and manufacture interior structures for the Fleet of Hitachi Class 800 rail vehicles.

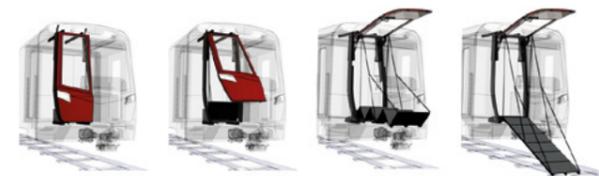
Project includes:

- Bike Storage Unit
- Catering Module
- Body End Partitions
- Toilet Doors (both UAT & SST)
- Toilet Cladding Panels
- Toilet Internal Cupboard Doors/Access Panels
- Electrical Cubicles
- Door Pocket Panels
- Antennae Covers



Detrainment Doors

TRB are global leaders in the design and manufacture of Detrainment Doors worldwide. We have successfully designed, manufactured and deployed detrainment doors for the Victoria Line and Sub Surface Line Vehicle and Class 378 London Overground Vehicles.



COMPOSITE DOOR LEAVES

TRB has developed a new biocomposite resin based carbon fibre reinforced (CFRP) sandwich panel door leaf with a 100% recycled foam core. The door leaf gives the rail industry a sustainable, 'green' composite material option for carriage door leaves at a comparable cost to aluminium bonded door leaves, with a 35% weight saving. The composite structural system easily passes BS 6853 and BS 476 Part 7 Class 1a and is EN 45545 HL3 compliant.



Door weight reduced from

40KG

(aluminium composite)

TO

26KG

(fibre composite)

FEATURES AND BENEFITS

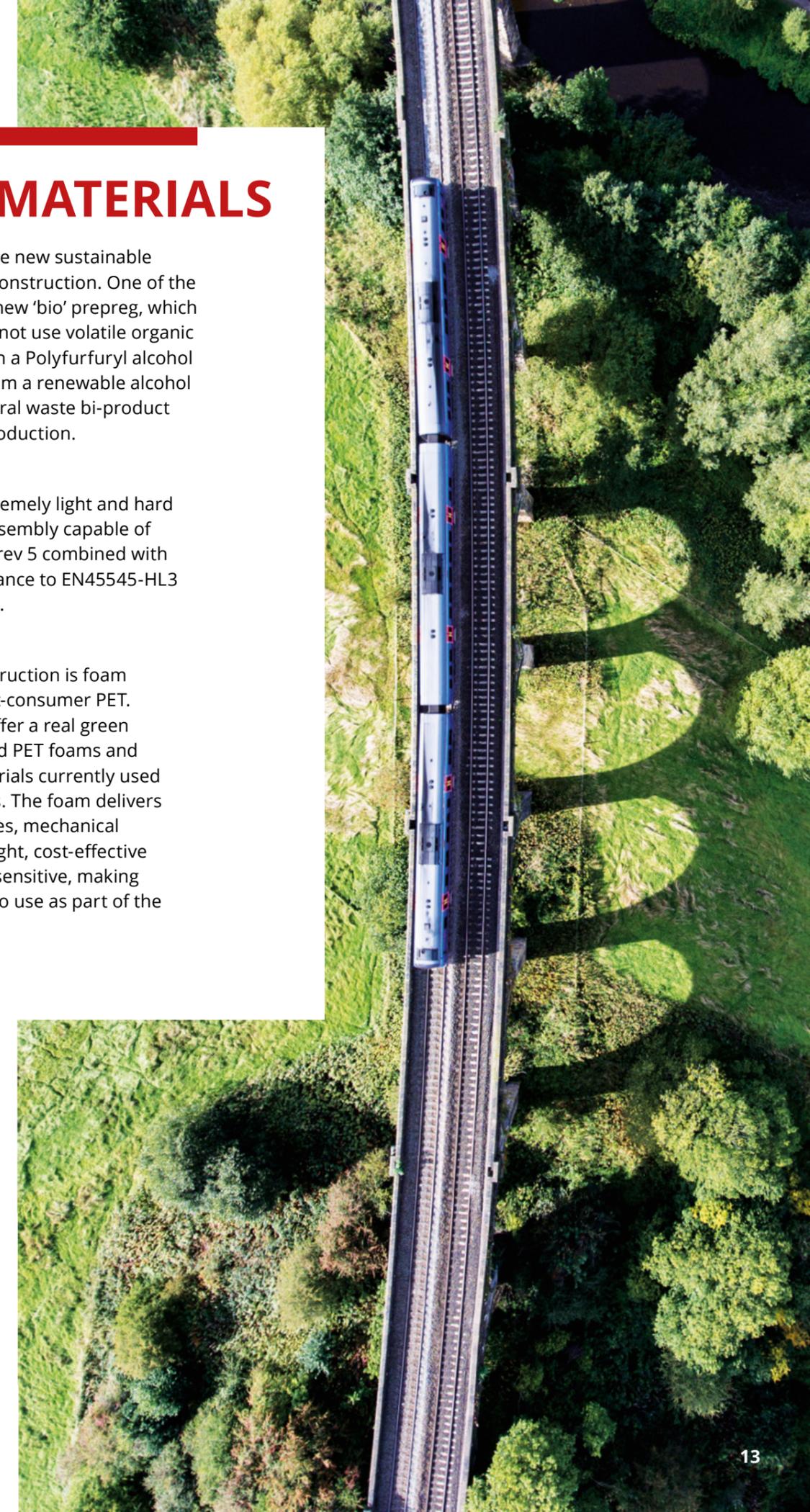
- Reduction in energy consumption
- Reduced track wear and tear
- Reduction in journey times through faster dwell times
- Low maintenance costs through its 40 year life cycle
- Long life expectancy as the leaf does not oxidise or rust

GREEN MATERIALS

It was important to use new sustainable materials during the construction. One of the materials used is the new 'bio' prepreg, which is non-toxic and does not use volatile organic solvents. It is based on a Polyfurfuryl alcohol (PFA) resin derived from a renewable alcohol produced from a natural waste bi-product from refined sugar production.

It can produce an extremely light and hard wearing composite assembly capable of meeting GM/RT 2100 rev 5 combined with exceptional fire resistance to EN45545-HL3 (BS 6853 Category 1A).

Also used in the construction is foam made from 100% post-consumer PET. This enables TRB to offer a real green alternative to standard PET foams and other foam core materials currently used in railway applications. The foam delivers superior FST properties, mechanical properties, is lightweight, cost-effective and environmentally sensitive, making this an ideal product to use as part of the composite door.



WHO WE WORK WITH



QUALITY APPROVALS

TRB's current quality approvals:

- IRIS
- ISO
- RISQS

TRB have a range of materials that are certified to the following fire standards:

- BS 6853 Category 1A
- EN 45545 - HL3

Approvals currently being implemented for this year:

- DIN 6701

Through our European Partners Seisenbacher, we also have access to the following Certified services:

- Welding in accordance with EN 15085

