

Thermoformed components made of SIMORAIL HL3 – for greater sustainability in local public transport



Top: interior view of the electric bus; bottom left: thermoformed roof frame cover made of SIMORAIL HL3; bottom right: exterior view of the electric bus

The expansion of urban areas has produced greater demand for fast and efficient public transport. In this context, sustainability and climate protection are playing an increasingly important role. Against this backdrop, the Australian city of Brisbane has teamed up with Carrosserie HESS AG, Switzerland, for the purpose introducing a fleet of battery-powered double-articulated buses as part of its new metro system. PLASTIKA BALUMAG AG, also based in Switzerland, is producing the thermoformed roof frame and door covers made of SIMORAIL HL3 for these electric buses.

The project at a glance

Project

Production of thermoformed roof frame and door covers made of SIMORAIL HL3 for electric buses

Requirements

- Superior flammability properties
- Good thermoforming properties
- High degree of rigidity
- Excellent shape retention
- Certification according to EN 45545-2, hazard level HL3

Client

Carrosserie HESS AG, Bellach, Switzerland

Contractor

Plastika Balumag AG, Hochdorf, Switzerland

Technical support

SIMONA AG, Business Line Mobility, Kirn, Germany

Products used

SIMORAIL HL3 sheets in sizes 920 x 780 x 2.5 mm and 1,650 x 1,310 x 2.5 mm, light grey (RAL 7035), texture in visible area P05

Duration of project

1 year



Left to right: lighTram® 25 TOSA pilot metro; SIMORAIL HL3 sheet; installed roof frame and door covers made of SIMORAIL HL3

SIMORAIL HL3 – light, durable and 100% recyclable

Initial situation

Brisbane is considered the fastest growing city in Australia, with two-thirds of public transport passengers using buses. The existing transport network is increasingly operating close to capacity. The city has set itself the goal of sustainable growth, including emission-free mobility. With a fleet of 60 battery-powered lighTram® 25 TOSA electric buses supplied by Carrosserie HESS AG, Switzerland, Brisbane Metro aims to build an all-electric public transport system linking the city centre with the suburbs.

Task

Due to the exacting regulatory standards implemented by the City of Brisbane in respect of fire protection in public vehicles, HESS was faced with the task of improving the flammability properties of materials conventionally used in their buses. With this requirement in mind, the company turned to PLASTIKA BALUMAG, a company specialising in thermoformed components for vehicles, among other things. As the roof frame and door covers represent the largest part of the interior panelling in terms of surface area, adapting the materials of these components offered the greatest potential for reducing flammability levels.

The focus was on finding a material with low flammability that met the certification requirements of EN 45545-2 at hazard level HL3. In addition, the material had to have good thermoforming properties and combine a high degree of rigidity with dimensional stability. PLASTIKA BALUMAG also wanted to ensure that the new material would necessitate as few changes as possible with regard to existing processes and tools.

Solution

In SIMORAIL HL3 sheets, PLASTIKA BALUMAG found a product that met the above-mentioned requirements not only with regard to fire protection standards but also in terms of thermoforming properties. The thermoforming machine only required minor adjustments to specific parameters for the manufacture of roof frame and door covers in line with existing processes. In addition, the high rigidity and dimensional stability of the material meant that the initial thickness of 3.5 mm could be reduced to 2.5 mm. Given the large surfaces involved, this not only produced considerable cost savings but also a significant reduction in the weight of the bus, which is a key benefit in environmental terms.

The pilot bus arrived in Brisbane in April 2022. Following successful testing, a further 59 e-buses are now to be added to the fleet and are expected to be put into service by the end of 2024.

SIMORAIL HL3

Properties

- Efficient handling
- High impact strength
- Superior thermoforming properties
- Wide range of design options with regard to colour and texture
- Low flammability
- Certified according to current fire protection standards (EN 45545-2, NFPA 130, Boeing BSS 7239, Bombardier SMP 800-C)

Fields of application

Components for vehicle interiors (including trains, buses, trucks, ships), e.g.

- Seats
- Armrests
- Wall coverings
- Window panels
- Partitions
- Ceiling elements
- Shelves

Product range

Extruded sheets in customised lengths; width up to 2,000 mm; thicknesses 1-6 mm

Further information

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