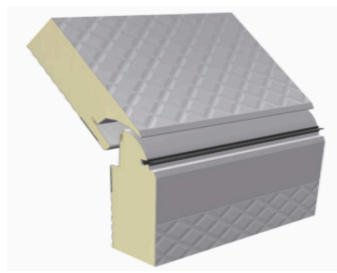


Exploring More Sustainable Alternative Materials for Industrial Doors

The world is in a state of climate emergency and the demand for improved sustainability in every field is higher than ever before. Products are being redeveloped to minimise their carbon footprint. A significant step towards reducing CO2 emissions is to use more sustainable materials.

This project was done in cooperation with ASSA ABLOY Entrance Systems, who specializes in producing different types of doors, including residential, pedestrian and industrial. ASSA ABLOY is currently facing the challenge of having to halve their emissions from 2020-2030 and reach net zero emissions by 2050 in order to reach their sustainability goals. The purpose of this project was to support the company in reaching this goal by exploring materials with lower global warming potential for their industrial door. The focus of the material change is in the Panel Section since this is one of the parts that emits the most carbon during its life cycle. The Panel Section mainly consists of steel or aluminum as the surface layer, and polyurethane foam as insulation.



Current Panel Section.

The project resulted in three exciting new concepts, each focusing on different properties. These concepts use bamboo for the surface layer and either expanded polystyrene (EPS), polyurethane foam, or hemp for insulation. The bamboo and EPS combination is versatile and reliable. The bamboo and polyurethane foam option has great thermal insulation. Finally, the bamboo and hemp concept is designed to be the most sustainable option. To maintain the same strength in the panels, the thickness of the surface layer has to increase from 0.4 mm to 5.8 mm. That is to say, from an average human nail thickness to about the thickness of a Wasa's crispbread.

Adopting any of these three concepts will greatly reduce the carbon footprint. Depending on the choice, the emissions reduction per average-sized door could be equivalent to the carbon saved from a trip from Malmö to Amsterdam or Lund to Paris with a medium-sized car. However, these new concepts fall short in thermal insulation and cost compared to the current panels.

The continuation of this project can lead to new possibilities for future industrial doors. With more thorough analyses and testing, one of these concepts might be ready for real-world use. Implementing any of them would significantly reduce CO2 emissions, paving the way for a safer future for generations to come.

