

Commercial and ecological benefits of lightweight design

A study has analysed the benefits of the payload-optimised semi-trailers produced by BERGERecotrail®. Thanks to their low unladen weight, the maximum payload increases to up to 28 tonnes, meaning that considerably more goods can be transported per journey. This enables an average of 7 percent fewer journeys or additional freight. At the same time, fuel consumption on journeys with lower loads can be reduced significantly thanks to the trailer's own unladen weight. The overall result is cost savings averaging 6.1 percent.

From a macroeconomic perspective, there are also benefits to the environment. In Germany alone, if half of all semi-trailers were to be payload optimised, it could lead to savings of up to 54 million litres of fuel and 143,000 tonnes of CO₂ per year.

Summary

Ympress® S700MC high-strength steel from Tata Steel enables BERGERecotrail® to apply lightweight design to its innovative and market-leading semi-trailers. This results in an extremely low unladen trailer weight that stands as the benchmark across the industry.

BERGERecotrail® is therefore predicting a significant increase in demand over the next few years, growth which Tata Steel will be well placed to support with its products and services.

Thanks to its high strength and outstanding formability, Ympress® S700MC makes it possible to manufacture steel semi-trailers that are both high-quality and lightweight. The increased payload of the trailer delivers cost benefits and protects the environment.

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The ultra-lightweight semi-trailers from BERGERecotrail® are payload optimised.

“Over the many years we have worked with Tata Steel, we have built up a relationship based on trust. We can rest assured that a solution will be found for every problem, be it in material procurement, transportation or support through design difficulties.”

Tobias Marian, Managing Director of BERGERecotrail®

TATA STEEL



Case Study
BERGERecotrail®

Project Name: BERGERecotrail®, payload-optimised semi-trailer benefits from Ympress® S700MC

Project: payload-optimised semi-trailers

Client: Berger Fahrzeugtechnik GmbH

Product: Ympress® S700MC



The only steel used is Ympress® S700MC from Tata Steel.

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BERGERecotrail®

Tata Steel supplies 100 percent of the sheet steel used in the BERGERecotrail® trailer, and takes over full supply chain management at Berger Fahrzeugtechnik GmbH in Radfeld, Austria. Due to Ympress® S700MC the BERGERecotrail® lightweight and payload-optimised semi-trailers enable more goods to be transported per journey, reducing the average journey number by 7 percent or enabling additional freight. At the same time, fuel consumption on journeys with lower loads can be reduced significantly thanks to the trailer's own unladen weight. The overall result is cost savings averaging 6.1 percent.

Background

Payload optimisation – improving the carrying capacity of a vehicle – is currently the most pressing issue in the field of goods transportation. The more weight that can be transported per tractor-trailer within the European regulatory weight limit of 40 tonnes, the greater the commercial and ecological benefits.

One option for increasing payload is to reduce the weight of tractors and semi-trailers. The lightweight construction of semi-trailers in particular is becoming increasingly important and, for decades, BERGERecotrail® has been the benchmark in the design and production of such trailers.

For more than ten years, Tata Steel has been delivering 100 percent of all sheet products required by the BERGERecotrail® for its payload-optimised semi-trailers, featuring lightweight steel construction. The steel manufacturer also handles the entire management of the associated supply chain.

Ympress® S700MC

BERGERecotrail® uses only Tata Steels Ympress® S700MC for its lightweight semi-trailers. This fine-grained steel is provided in a number of gauges for different parts of the product, from the trailer body to the welded frame construction for the chassis.

The Ympress® product range consists of hot-rolled, high-strength and low-alloy

steels notable for their outstanding formability. At the same time, product characteristics – such as mechanical properties, steel chemistry and the tightest dimensional tolerances – remain highly consistent. The Ympress® steels are also very well suited to galvanizing, welding and post-processing.

Weight savings thanks to lightweight steel design

The extremely high strength and outstanding formability of Ympress® S700MC means that BERGERecotrail® can design its components with lower wall thickness, while guaranteeing the required stability and safety. Together with specialist production processes, the high-strength steel from Tata Steel ensures that the semi-trailers achieve an extremely low unladen weight of less than 4.7 tonnes, while demonstrating very high fatigue strength.

Moreover, BERGERecotrail® uses Ympress® S700MC to produce a design containing only hollow, U and Z profiles. This avoids water in-clusion and, by painting all exposed parts, delivers an excellent corrosion protection.

Design of the payload-optimised semi-trailer

One particular highlight in the design of the payload-optimised semi-trailer is the two longitudinal beams. The 13.60-metre long components are designed to be very slender, and feature cut-outs in the shape of Reuleaux triangles for further weight savings combined with a high degree of stiffness.

The laser cutting of the webbing is handled by a qualified supplier working closely with Tata Steel. The steel producer functions as an intermediary between BERGERecotrail® and the laser facility to ensure that the material is processed with the required precision and the necessary quality in line with aimed specifications and drawings.

Supply chain management

Tata Steel also handles the entire supply chain management for BERGERecotrail®, Blume Stahl service GmbH – a Tata Steel service centre based in Mülheim/Auhr, Germany – coordinates production of the Ympress® S700MC coils and their de-coiling, as well as needs-based stock holding and transportation logistics. All suppliers of BERGERecotrail® are delivered just-in-time with the required steel specifications and quantities in consistent qualities. Tata Steel also organises some onward transportations of the completed parts to the trailer production plant in Tyrol, Austria.

