Advanced High-Strength Steels Unlock 34 Per Cent Part Reduction and Significant Manufacturing Savings in WorldAutoSteel Front Body Structure Study

Study highlights how advanced high-strength steels (AHSS) can unlock significant piece and manufacturing cost savings for vehicle manufacturers

BRUSSELS, BELGIUM, 12 May 2026 - A steel industry feasibility study has identified that through modest assembly line changes and greater use of advanced high-strength steels (AHSS), it is possible to significantly reduce vehicle part count by up to 34 per cent in the front body structure.

As vehicle manufacturers (OEMs) face rising pressure to simplify complex vehicle architectures, particularly for BEV platforms, it is no longer a question of whether parts consolidation is possible. Rather, the study directly addresses how it can be achieved at scale, without compromising safety, performance or manufacturability.

The study commissioned by WorldAutoSteel, also revealed that vehicle manufacturers, (OEMs) could reduce total manufacturing investment costs by $21m, achieve weight savings of eight per cent and decrease piece cost by 10 per cent.

WorldAutoSteel, the automotive group of the World Steel Association, comprises the world's largest automotive steel producers. Together with its members, it conducts research and technical programmes designed to meet the automotive industry's challenges in a sustainable and environmentally responsible way. For this study it tasked Ricardo, a global specialist in automotive technology development, to create a virtual solution for a new front body structure using the Steel E-Motive vehicle concept as the baseline reference.

Part count reduction down from 38 to 25

The results of the study highlight the potential available. Using the Steel E-Motive vehicle concept[1] as the base, the new design achieved a reduction of 13 parts – 34 per

[1] Steel E-Motive Engineering Report and Other Resources

cent of the overall. An eight per cent weight saving and a 10 per cent reduction in piece cost were also possible. The reductions were based on consolidating individual parts into larger single hot and cold stamped parts, often incorporating more complex geometry.

Ease of repair and structural performance retained with AHSS

High strength and formability were achieved using both hot stamped press hardened steel, with an indication that further improvements around cost and weight could be achieved through incorporating tailor welded blanks into a consolidated part. Structural performance appeared to be maintained, with no differences anticipated in respect of ease of repair.

Steel offers significant cost saving potential

While steel is widely acknowledged as the most sustainable, low-emission and circular solution for next-generation mobility[2], the financial arguments made in the study are also compelling. Ricardo estimated $21m reduction in total manufacturing investment costs for the front body structure was achievable through simplified tooling and assembly fixtures. Assuming the approach could be applied to the complete body-in-white and closures, the total reduction could be in the order of $112m when considering buildings, assembly equipment and tooling costs.“It is clear that steel delivers the most sustainable, safe and scalable path for next-generation mobility. Technically challenging studies such as this demonstrate the potential of advanced high-strength steels to address the automotive sector’s most pressing concerns,” said Ingo Olschewski, Director, WorldAutoSteel. “Steel, the most trusted structural material[3], provides an answer in addressing challenges around parts consolidation and assembly line efficiencies. The study demonstrates ever greater potential for it to enable high-performance engineering solutions for future mobility.”

For more information about the study, contact: steel@worldautosteel.org.

Image download link: https://talacom.fromsmash.com/PartsConsolidationImagery

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[2] Steel – The Sustainable Option for Future Mobility - WorldAutoSteel
[3] What Type of Steel Is Used in the Automotive Industry? | Automotive Steel Grades Explained

About WorldAutoSteel

WorldAutoSteel is a group of the world's largest automotive steel producers, focused on advancing vehicle manufacturers' use of steel for future mobility through strategy, engineering, research, and advocacy programmes. The organisation initiates market insights, technical studies and engineering programmes to support the automotive industry with practical tools, guidelines, and innovative vehicle concepts as well as component designs. WorldAutoSteel is the automotive group of the World Steel Association. Both organisations are headquartered in Brussels, Belgium.