

STIR4STEEL

Unleash the potential of multi-material solutions for vehicles

High performance steels (e.g., AHSS, PHS enhanced machinability steels) are key for lightweight, electrification and fuel efficiency of road vehicles of today and tomorrow. Boosting joinability of these cutting-edge materials by pushing friction stir technology to a next level is the goal of the Stir4Steel EU-project. By that this 3 year project funded under RFCS paves the way for vehicle components that enable green road mobility.

Best of both worlds

AHSS/PHS combined with Al cast nodes and Al extrusions in bodywork significantly reduce weight, improve performance and safety. To solve the weldability challenges in such steel based multi-material structures Stir4Steel advances the solid-state joining technology Friction Stir Welding (FSW) and Refill Friction Stir Spot Welding (RFSSW) for their implementation in advanced multi-material electric vehicle battery tray structures, shock towers/front rails and B-pillars.

Double it

At least double current FSW weldable thickness for same-material components made of enhanced-machinability steel grades (e.g. engine pistons) and enhancing process robustness by improved tool life and reliability for such applications is also at the core of Stir4Steel.

... bottom line

Stir4Steel will deliver efficient, environment-friendly and cost-effective friction stir welding joining technologies, leading to weight-optimized components with complex geometries, superior crashworthiness properties and lower CO2 footprint by their production.

FACTS AND FIGURES

Title: Friction stir welding for improving joinability of high-performance steels for automotive components to boost green road mobility

Acronym: STIR4STEEL

Start date: 1st September 2021

Duration: 36 months

EC funding: EUR 1.17 million

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