

Press Information

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Lightweight Design Potential of Hybrid and Heavy Commercial Vehicles The Lightweight Forging Initiative goes international as it enters the third phase

Hagen, July 26, 2017

In July 2017, “The Lightweight Forging Initiative Phase III” was launched. With immediate effect, a cooperation of around 40 companies from Europe, Asia and the US will devote its efforts to determining the lightweight design potential of hybrid and heavy commercial vehicles in terms of the powertrain, chassis and transmission. The results of the study will be available in early summer 2018.

“Reducing the CO₂ emissions and weight of vehicles is one of the most important topics for the automotive industry and thus also for the forging companies and steel manufacturers which supply to it. At the same time, when producing a forged part many companies are involved in sequence, leading to a supplier chain which is very long and divided up. This has made joint development efforts essential for generating more innovation,” explains Dr. Hans-Willi Raedt, Vice President Advanced Engineering of the Hirschvogel Automotive Group and Chairman of the cooperation for the forging partners.

In 2013, 24 forging companies and steel manufacturers thus joined forces in “The Lightweight Forging Initiative” to demonstrate how forging technology contributes to automotive lightweight design. Experts from both industries asked themselves how individual components – from the crankshaft and transmission shafts to gears and fasteners – can be rendered lighter by means of material, production engineering and design measures. And the results are impressive: By successfully optimizing components of a medium-sized passenger car during project phase I, the lightweight design ideas led to an average weight reduction of 10 percent, resulting in a weight saving of 42 kg. In the case of the light commercial vehicle under analysis during project phase II, the potential weight saving even amounted to 99 kg.

“We have shown that modern steel materials in forging technology can make a decisive contribution to the lightweight design requirements of the vehicle industry. Both studies verify that new ideas generate very tangible competitive advantages over rival production processes and materials,” says Dr. Thomas Wurm, Head of Technical Customer Support and Application Development at Georgsmarienhütte GmbH as well as Chairman of the cooperation for the steel partners.

The fruitful collaboration among the companies of the Initiative under the auspices of the German Forging Association (Industrieverband Massivumformung e. V.) and the VDEh Steel Institute

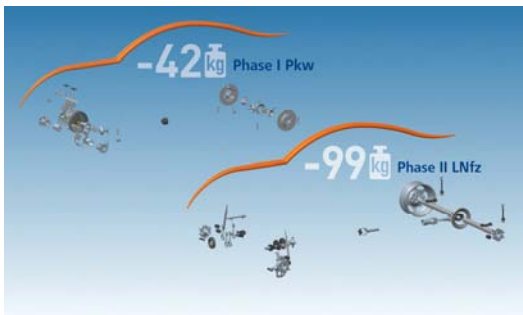
(Stahlinstitut VDEh) will now continue with international partners in project phase III. Under analysis this time is the lightweight design potential of forged components in the powertrain and chassis of a hybrid car – a vehicle type which will become increasingly important over the next few years until complete electrification of passenger cars is on the roads.

In addition, a research project funded by the Federal Ministry for Economic Affairs and Energy (BMWi) was launched in 2015. This involved 10 university chairs and institutes analysing ways of making car powertrains even lighter by means of new steel materials, part designs and production methods, while nevertheless fulfilling high service life expectancy.

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Caption to the enclosed picture:

Around 40 companies have joined forces to explore how forged steel parts can be used innovatively in vehicle construction.



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Industrieverband Massivumformung e. V. (German Forging Association)

Industrieverband Massivumformung e.V., with its 120 members, represents the interests of the industry with sales of 6.5 billion euros and 30,000 employees. A core task is organising collaboration across the member companies, most of which are medium-sized businesses, with the aim of working together to increase the competitiveness of the individual firms. Germany is the technology leader when it comes to forging and, after China, is the world's largest producer of forged parts.

Stahlinstitut VDEh (VDEh Steel Institute)

The association promotes cooperation among engineers on projects of a technical or scientific nature, or a combination of both, with the aim of further developing steel technology and the material steel. Stahlinstitut VDEh focuses on collaborative research and information exchange. In international collaborative work, system manufacturers and suppliers are also involved. Today, Stahlinstitut VDEh members include around 5,300 university graduates in technical, scientific and commercial subjects or those in leading positions in industry and trade. Besides this, 150 companies have joined the association from the areas of iron, steel and associated materials.