

## Research Network



**64 companies** from the entire process chain through to the automotive manufacturer, **4 research associations**, **10 research institutes** and **2 further universities** make up the new Research Network entitled “**Lightweight Forging** – Innovation Network for Technological Progress in Part, Process and Material Design for Forged Parts in Automotive Technology”. The goal is to use modern steel materials, part design and production methods to make the car powertrain and chassis lighter and yet still able to fulfil the most stringent requirements with regard to service life.



The Research Network is being funded via the German Federation of Industrial Research Associations (AiF) as part of the program for financing the Pre-Competitive Cooperative Industrial Research Project (IGF) of the Federal Ministry for Economic Affairs and Energy due to a resolution of the German Bundestag.

## 5 research projects from May 2015

- SP 1 Development of ultra-high-strength steels** for alternative heat treatments and for the cold forging of parts in the powertrain of passenger cars
- SP 2 Intelligent lightweight design** through multi-component processes
- SP 3 Lightweight design through targeted setting of local part properties** with optimised forging and machining processes
- SP 4 Expanding technological boundaries** when forging in different temperature ranges
- SP 5 Innovation transfer**, technical potential assessment and lifecycle analysis



### Your contact partner

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## TWO INDUSTRIES, ONE GOAL...

**massiver LEICHTBAU**  
(Lightweight Forging)

### Lightweight Forging Initiative Forging and Steel Industry

Study of industrial  
lightweight  
design potential  
with 24 partners

Phase I  
Passenger Car

2013 – 2014

Study of industrial  
lightweight  
design potential  
with 28 partners

Phase II  
Light Commercial  
Vehicle

2015 – 2016

“Lightweight  
Forging”  
Research  
Network

2015 – 2018

Information, dates  
and participating companies:  
[www.lightweightforging.com](http://www.lightweightforging.com)

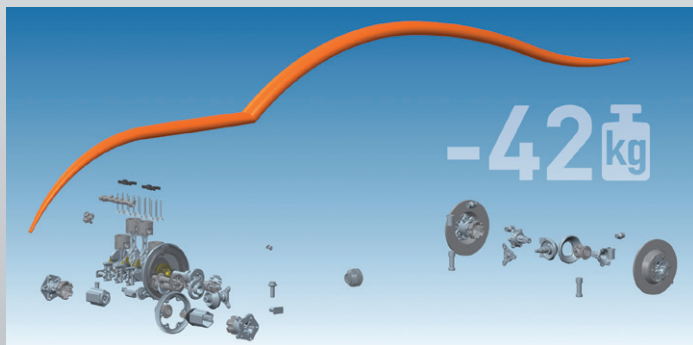
## Phase I Passenger Car 2013–2014

At the beginning of 2013, **24 companies from the forging and steel-making industries** joined forces in the Lightweight Forging Initiative. Without drawing on public funding, the companies financed the study entitled “**Lightweight Design Potential of Forged Components in Passenger Cars**”,



which was carried out by the automotive engineering research company, Forschungsgesellschaft Kraftfahrwesen mbH Aachen (fka). Working in unison, the members of the consortium determined

the lightweight design potential of forged parts as well as the possibilities offered by steel as a material in vehicle construction. The goal was to achieve weight savings in cars using innovative components made of steel. This was by far the largest pre-competitive joint project of these two industries.



In total, a feasible lightweight design potential of 42 kg was identified for the powertrain and chassis, and 399 lightweight design ideas were formulated.

## Phase II Light Commercial Vehicle 2015–2016

A newly constituted consortium of **17 forging companies, 10 companies from the steel industry** (manufacturers of wire and bar) and **an engineering service provider** joined forces at the beginning of October 2014 to continue the success of Phase I by launching “The Lightweight Forging Initiative Phase II: Light Duty Vehicle”.



Alongside the 28 partners of Initiative, both the Forschungsgesellschaft Kraftfahrwesen mbH Aachen (fka), and the Institute of Product Development (IPEK) of the Karlsruhe Institute of Technology (KIT) have been analysing additional lightweight potential offered by forged parts **since the beginning of 2015** – during Phase II for components in light duty vehicles.



Here, too, the goal is to raise awareness of the possibilities for optimising weight in the powertrain and chassis and thus to highlight advantages over competing production processes and materials. The project is likewise being financed from the resources of the companies and associations involved.

### Research Network: Outlook

Additional possibilities for lightweight design potential based on the results from Phase I and II are expected in approx. 2 years. When the **five research projects started in May 2015** provide scientific substantiation of the dynamic load of new materials, further results will be produced. The Lightweight Forging Initiative anticipates additional weight optimisation possibilities from the Research Network.

Current information on  
[www.lightweightforging.com](http://www.lightweightforging.com)

