Presseinformation

17 June 2015

1st Status Meeting of the large “Lightweight Forging” Research Network on 12 May 2015 in Düsseldorf

On 12.05.2015, over 70 representatives from industry and science came together at the Stahl-Zentrum, Düsseldorf, to find out more about the content of the AiF (the German Federation of Industrial Research Associations) Research Network entitled “Lightweight Forging – Innovation Network for Technological Progress in Part, Process and Material Design for Forged Parts in Automotive Technology,” which commenced on 01.05.2015 and has a duration of three years. The event also provided the opportunity to discuss the planned activities of the project.

Following a welcome address by Dr. Wieland (FOSTA – Research Association for Steel Application), Dr. Raedt (Hirschvogel Automotive Group, Denklingen) outlined the motivation for achieving lightweight design in the powertrain and chassis of vehicles which led to the formation of the joint “Lightweight Forging” initiative comprising steel manufacturers and forging companies (www.massiverLEICHTBAU.de). The joint initiative has completed a study on the lightweight design potential of a medium-sized passenger car, and is currently carrying out a second study on a light commercial vehicle with 28 participating companies. Dr. Ernst from the automotive engineering research company, fka, presented the results of the first study and pointed out that through the intensive analysis of the components installed in the passenger car, weight savings of 42 kg were determined for the area of the chassis and powertrain.

In his overview presentation, Professor Zoch (IWT – Foundation Institute of Materials Science) picked up on the points made in the previous presentations and placed them in the context of the work which will be carried out in the new Research Network. He underlined that lightweight design in automotive engineering leads to lower fuel consumption. At the same time, it is necessary to achieve a long service life of the assembled parts. The parts thus need to demonstrate a high load bearing capacity. A key technology here is lightweight design with steel, which until now has been limited primarily to the car body. The goal of the “lightweight forging” Research Network is to use new steel materials, part designs and production methods to make even the car powertrain and chassis – from the engine to the transmission and wheels – lighter while still fulfilling stringent requirements with regard to service life. The Research Network, with its five subprojects, unites in an interdisciplinary way the entire process

chain ranging from material, design, production and innovation management through to OEMs. This Research Network fits into the high-tech strategy of the German government with respect to “Production and Material Technologies” and covers the requirement areas of climate/energy and mobility. Furthermore, besides technical problem-solving, a sustainable development network will be set up for a new innovation culture along the process chain which should be transferable to other industries, too.

The next status meeting of the Research Network is scheduled for 19.04.2016. Up until then, meetings will take place on the individual subprojects during the second half of 2015.

Further information on the Research Network:

The Research Network was generated from the idea competition “Leading Technologies for SMEs” of the BMWi and the AiF and currently comprises five subprojects in which ten research institutes from five federal states are involved:

- 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. (Pre-Competitive Cooperative Industrial Research Project (IGF) No. 24 LN / P 1055)
- SP 2 Intelligent lightweight design through multi-component processes (Pre-Competitive Cooperative Industrial Research Project (IGF) No. 18189 N / P 1056)
- SP 3 Lightweight design through targeted generation of local part properties with optimized forging and machining processes (Pre-Competitive Cooperative Industrial Research Project (IGF) No. 18225 N / P 1057)
- SP 4 Expanding technological horizons when forging in different temperature ranges (Pre-Competitive Cooperative Industrial Research Project (IGF) No. 18229 N / P 1058)
- SP 5 Innovation transfer, technical potential assessment and lifecycle analysis (Pre-Competitive Cooperative Industrial Research Project (IGF) No. 25 LN / P 1059)

Another subproject, TP 6 “Analysing the Compound Forging of Dissimilar and Similar Material Combinations”, is in the application process. SP 6 is intended to complement the work carried out in the other subprojects in the area of part production by investigating material combinations which have not been researched to date.

The Research Network has been financed since 01.05.2015 by the Research Association for Steel Application (Forschungsvereinigung Stahlanwendung e. V. – FOSTA), which serves as the lead institution, the Heat Treatment and Material Engineering Association (Arbeitsgemeinschaft Wärmebehandlung und Werkstofftechnik e. V. – AWT), Bremen, the Research Association for Drive Technology (Forschungsvereinigung Antriebstechnik e. V. – FVA), Frankfurt, the Research Association of Steel Forming (Forschungsgesellschaft Stahlverformung e. V. – FSV), Hagen, from funds of the Federal Ministry for Economic Affairs and Energy (Bundesministerium für Wirtschaft und Energie – BMWi) via the German Federation of Industrial Research Associations (Arbeitsgemeinschaft industrieller Forschungsvereinigungen „Otto von Guericke“ e.V. – AiF). SP 1 and SP 5 are being financed by the Leading Technology Initiative; the subprojects SP 2, SP 3 and SP 4 are being financed by the standard procedure within the Pre-Competitive Cooperative Industrial Research Project (Industrielle Gemeinschaftsforschung – IGF) of the BMWi. Furthermore, goods and services will flow from industry into the Research Network over the three-year duration period.

Research institutes of the Research Network are:

- IWT – Foundation Institute of Materials Science (Stiftung Institut für Werkstofftechnik), Bremen (Prof. Hans-Werner Zoch) as Coordinator
- IEHK – Department of Ferrous Metallurgy (Institut für Eisenhüttenkunde), Aachen (Prof. Wolfgang Bleck)
- FZG – Gear Research Centre (Forschungsstelle für Zahnräder und Getriebebau), Munich (Prof. Karsten Stahl)
- utg – Institute of Metal Forming and Casting (Lehrstuhl für Umformtechnik und Gießereiwesen), Munich (Prof. Wolfram Volk)
- IFU – Institute for Metal Forming Technology (Institut für Umformtechnik), Stuttgart (Prof. Mathias Liewald)
- ISF – Institute of Machining Technology (Institut für Spanende Fertigung), Dortmund (Prof. Dirk Biermann)
- IUL – Institute of Forming Technology and Lightweight Construction (Institut für Umformtechnik und Leichtbau), Dortmund (Prof. A. Erman Tekkaya)
- IFUM – Institute for Forming Technology and Forming Machines (Institut für Umformtechnik und Umformmaschinen), Hannover (Prof. Bernd-Arno Behrens)
- RWI – Rhineland-Westphalia Institute for Economic Research (Rheinisch-Westfälisches Institut für Wirtschaftsforschung), Essen (Prof. Christoph M. Schmidt)
- ika – Institute for Automotive Engineering (Institut für Kraftfahrzeuge), Aachen (Prof. Lutz Eckstein).

(approx. 7,205 characters)

Caption
Participants at the 1st status meeting of the “Lightweight Forging” Research Network on 12.05.2015 at the Stahl-Zentrum, Düsseldorf

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FOSTA – Research Association for Steel Application (Forschungsvereinigung Stahlanwendung e. V.)
The Research Association for Steel Application (FOSTA) is a non-profit and legally independent research association within the steel sector. As a non-profit organisation, it represents the interests of the steel industry in the area of applied research together with users of steel and its various products. The focal areas of research *encompass a broad spectrum of topics and are always guided by public debate. Topics such as CO_2 reduction and resource efficiency, for example, are of importance to FOSTA. The following focus areas characterize the profile of FOSTA: material behaviour, machining and processing, traffic engineering, civil engineering, environmental technology.*

AWT – Heat treatment and Material Engineering Association (Arbeitsgemeinschaft Wärmebehandlung und Werkstofftechnik e. V.)
The Heat Treatment and Material Engineering Association (AWT) promotes research and development in the areas of heat treatment and material technology, and contributes to expanding knowledge in these areas. The primary goals are to

- *encourage and promote research projects in this field;*
- *carry out training events (HeatTreatmentCongress, conferences, symposia, lecture series, seminars, courses);*
- *develop recommendations and guidelines for technical procedures and to assist in the standardisation process;*
- *issue publications and documentation.*

*The AWT is a founding member of the AiF (*the German Federation of Industrial Research Associations) and is the first founder of the IWT (Foundation Institute of Materials Science) in Bremen, an internationally renowned research institute focussing on the areas of materials technology as well as process and production engineering.

FVA – Research Association for Drive Technology (Forschungsvereinigung Antriebstechnik e. V.)
The Research Association for Drive Technology (FVA) is the world's leading innovation network in drive technology. The goal of the association is to strengthen the competitiveness of the largely medium-sized member companies by generating synergies as part of pre-competitive research projects.
The member companies themselves determine the fields of research. The diversity of the member companies is thus reflected in the research topics, which range from oil and lubricant analyses to calculating the service life of bearings and gears as well as carrying out component tests for main gearboxes. Electrical drives and components are also increasingly becoming a focal area.
The strength of the FVA lies in the common search for solutions to the challenges which move the industry. Furthermore, close collaboration with the leading research institutes in Germany guarantees a supply of highly qualified young researchers.

FSV – Research Association of Steel Forming (Forschungsgesellschaft Stahlverformung e. V.)
The Research Association of Steel Forming (FSV) is an organisation of the steel-forming industry which actively supports its member associations and their member companies in carrying out joint projects. As a member association of the AiF (the German Federation of Industrial Research Associations), the FSV is primarily a point of contact for medium-sized companies. The FSV supports interested member companies of their industry associations in searching for cooperation partners for research projects. In addition, the FSV coordinates and accompanies the projects initiated by the companies or institutes, arranges financing and liaises with the project sponsors.
Member associations of the FSV are the:
- German Fasteners Association (Deutscher Schraubenverband e.V.)
- Professional Association of Powder Metallurgy (Fachverband Pulvermetallurgie – FPM)
- Steel Flanges Association (Fachvereinigung Stahlflanschen e.V.)
- Industrial Association of Sheet Metal Forming (Industrieverband Blechumformung e.V. – IBU)
- Industrial Association of Hardening Technologies (Industrieverband Härtetechnik – IHT)
- German Forging Association (Industrieverband Massivumformung e.V.)
- Association of the German Spring Industry (Verband der deutschen Federnindustrie e.V.)