

Positions about the industry-political lightweight construction dialogue: Germany must become a leading supplier

The individual organisations that helped prepare this position paper represent Germany's largest network for lightweight construction. Based on this, this paper bundles the interests along the entire industrial value creation chain and sees itself as the mouthpiece of the German materials industries and/or German lightweight construction technologies. This is also the basis for developing and implementing integrated sustainable approaches along the entire lifecycle of lightweight components and products in terms of economic, ecological and social requirements.

The lightweight construction that is also prioritised in the existing coalition agreement in industrial Germany is enabled thanks to the use of the represented materials such as fibre-reinforced plastics, metals and combinations. It is therefore highly important to promote the continuous further development of energy, material and resource-efficient processes as well as products to exploit the unusual innovation potential of the various materials and procedures.

Our goal is to build upon the high level of competence in Germany and work with the government to develop Germany in the global market as the leading supplier of material-independent lightweight construction to all industries using all represented materials and to position it as an international leading supplier. Lightweight construction technologies combine a high economic potential with resource protection and energy efficiency. Lightweight construction therefore needs to become one of the central industrial and innovation-political topics in the new legislative period.

Firm and consistent development of the lightweight competences in Germany will secure the competitiveness and sustainability of the classic industrial sectors and guarantee security of high-quality industrial workplaces. At the same time, it makes important contributions toward resource and energy efficiency. Therefore, lightweight construction is not only typically ideal for combining ecology and economy, it also stands out for its sustainable quality and significant potential for solving problems.

Lightweight construction is one of the most important approaches, for instance, for further reducing the fuel consumption and the CO₂ emissions of vehicles and transport systems in the future. Materials with a low specific weight play a particular role in the usage phase. Lightweight construction helps to meet various goals of the key German technology, mobility equipment; these include, for instance, the reduction of energy and emissions, resource conservation, increasing the useful load (and thereby cutting the need for transport equipment), driving dynamics and increasing the range.

Only an integrated ecological examination of the material production through to the recycling phase highlights which materials sustainably take pressure off the climate and environment. This approach will be even more important for future electric vehicles than for conventional vehicles because no direct CO₂ emissions occur during operation. These will be completely shifted to the material generation, part and vehicle production, provision of the drive energy and the recycling phases.

Mobility technology is used for applications in cars and also commercial vehicles, and in the aerospace industry. Other larger markets are the construction of machines and systems, electrical technology, the recreation and sports industry as well as the construction industry. In the construction field, CO₂ reduction and significant resource savings can be realised by means of streamlined, lighter construction designs and longer durability in ecological and economic variants for standardised housing construction.

To achieve the goal of becoming a leading supplier, we work on innovations and technology, improve and automate processes and production by means of targeted know-how transfer and standardisation. This happens along the entire respective value creation chain - from the raw materials used through the production processes including the processing technologies, for instance joining technology, through to the parts and also the reuse of suitable recycling materials. In particular, new production procedures allow new lightweight construction concepts.

It is important to answer the question as to which material is the 'right' one for the respective application site and/or the application. This may be a material made of another substance or also the interplay of different materials. In particular, activities aimed at boosting multi-material lightweight construction should be prioritised in a government top cluster promotion program.

Future funding from the public authorities is urgently required to ensure competitiveness and to secure sustainable workplaces. To continue developing new markets and material chains successfully, the objective would be to encourage funding initiatives for a detailed market analysis, the expansion and the internationalisation of the BMWi lightweight construction competence atlas and international exhibitions and events. Reliable and permanent support of lightweight construction innovations of all relevant material groups from public funding is required, whereby aspects such as market proximity, technology transfer and integration along the value creation chain are especially important: The lightweight construction topic should be the focus of newly created, ideally inter-ministerial funding programs by the EU, the federal government and the states.

The conclusive industrial exploitation of the isolated lightweight technologies available at numerous research institutes has failed to date due to the lack of networking projects and/or the willingness to take necessary investment risks. The government could help here to realign the strategies for research funding to allow targeted funding along the national research roadmap. Within the scope of the BMWi funding program for cooperative industrial research, it would be advisable to set up, for example, a lightweight construction alliance of the active research associations in this field.

There is an urgent need to transition toward a systematic coordination of research projects and the presentation, testing and market penetration of current research results. It is important to accelerate the training of new specialists and to develop new business fields in smaller and medium-sized companies.

Germany should take care not to miss the boat in terms of international competition in the topic of lightweight construction. There is currently a great amount of investment in promoting lightweight construction technologies in Anglo Saxon countries (USA, Great Britain, Canada) in particular and in the classic or new automobile countries of Asia (Japan, South Korea, China).

Lightweight construction and electromobility, energy and material/resource efficiency, competitive position and secured workplaces are all priorities that were clearly outlined in the coalition agreement and/or the lightweight study by the BMWi. They are decisive for the economic success of Germany. Lightweight construction in all its technological facets can play a decisive role.

The signers of this paper and the organisations involved in it seek exchange with and the support from ministries and the government in general. We demand that industrial policy dialogue about lightweight construction initiated by BMWi quickly picks up speed. We are sure that close cooperation between political circles and business on the topics listed above provides an opportunity to create sustainable workplaces in the sense of the overriding goals.

In this sense, the initiated constructive and long-standing cross-industry and cross-material dialogue by all lightweight construction-relevant material groups and production procedure with its representatives from business, science and union representatives should be intensified.

Berlin, 29th May 2017