

THE ALUMINIUM AUTOMOTIVE MANUAL: 10 YEARS AT YOUR SERVICE AND RECENTLY UPDATED



CREDITS (in order of appearance): EAA, Alcoa, Sapa, Jaguar, EAA, Constellium, Amag

The Aluminium Automotive Manual provides an overview of both established and new, innovative aluminium applications in the automotive industry. It also offers in-depth technical information and practical experiences regarding the design and fabrication of aluminium automotive components and modules.

The information is compiled into online PDF documents which are classified into six major categories:

- Applications
- Design
- Materials
- Products
- Manufacturing technologies
- Joining techniques

The information contained in the Aluminium Automotive Manual is, however, general in nature and is not intended for direct application to specific projects. For additional information please contact your aluminium semis or component supplier to discuss details directly with the technical experts.

The Aluminium Automotive Manual can be downloaded from:

WWW.ALUEUROPE.EU/AAM

THE ALUMINIUM AUTOMOTIVE MANUAL:

Intended for technicians and engineers within the automotive industry and all other persons interested in lightweight automotive design with aluminium, the Aluminium Automotive Manual was first launched in February 2003.

In 2010, an updating process was started, focusing first on the sections "Design" and "Applications".

New versions of the "Design" section and the chapters "Power Train" and "Chassis and Suspension" were published in 2011. More recently, the section "Applications" was completely revised with the updated chapter "Car Body", which contains the latest information about body structures, hang-on parts, crash management systems, and many other innovative lightweight solutions.

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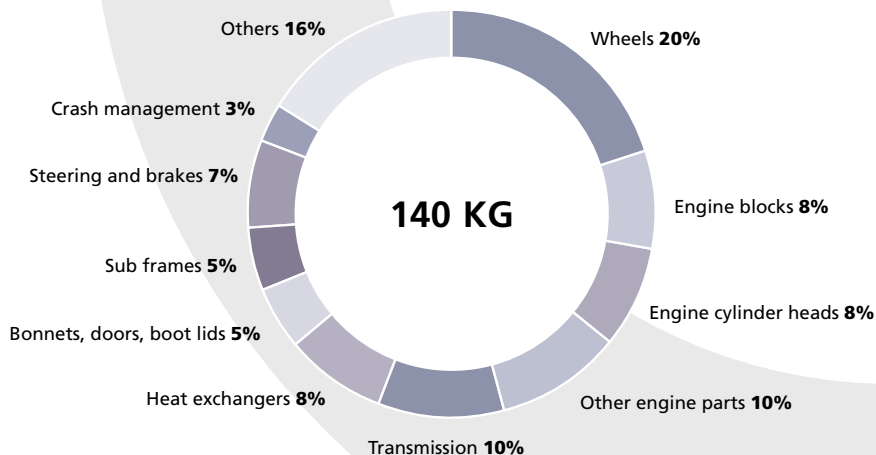
WHY USING ALUMINIUM?

Substitution of heavier materials with aluminium is a technically proven light-weighting measure in automotive design without compromising car safety or performance. Depending on the specific application, aluminium offers a weight reduction potential of 30-50 %, resulting in substantial fuel savings in the service phase. In addition, aluminium recycling from end-of-life vehicles is a well-established, easy and economically viable operation, allowing the fabrication of new automotive components while saving 95% of the energy required to produce primary aluminium.

In a modern car, aluminium castings, sheets, extrusions and forgings can be found practically everywhere, including the power

train, wheels, body structure and closures, as well as the chassis and suspension. A study published by Ducker Worldwide in cooperation with the European Aluminium Association (EAA) shows that the amount of aluminium used per car produced in Europe almost tripled between 1990 and 2012, increasing from 50 kg to 140 kg. This amount is predicted to rise to 160 kg by 2020, and could even reach as much as 180 kg if small and medium cars follow the evolution recorded in the upper segments.

Cost-efficient lightweight aluminium solutions are the result of a systematic approach, taking into account the material characteristics and the use of aluminium-specific design and manufacturing methods.



Distribution of aluminium in European cars

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