Ensuring sustainability in fastening technology

When we look at global developments in the automotive industry, it is clear that over the years, new cars and vans manufactured in Europe have become progressively heavier - from an average 1,268 kg in 2000, rising to 1,360 kg in 2010, and some 1,420 kg in 2020.

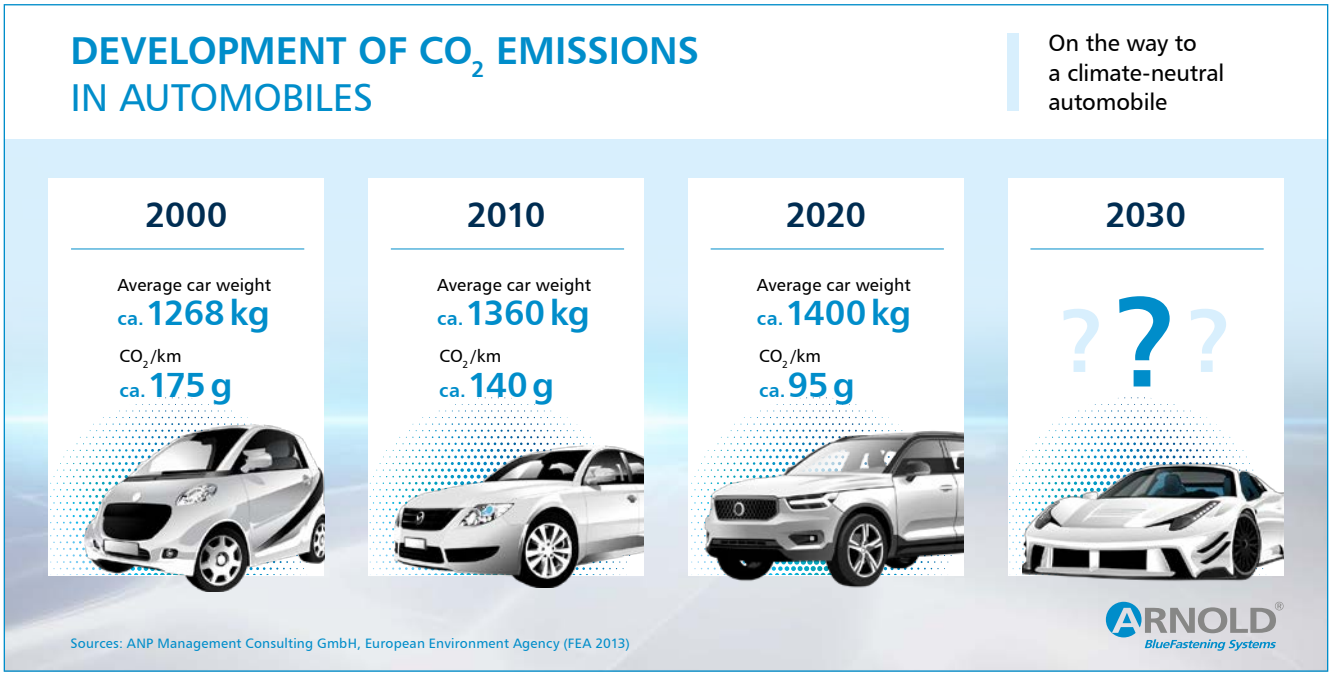

Image 1: Despite the rise in the weight of vehicles, CO_2 emissions in cars in Europe need to be reduced still further to achieve climate protection goals.
(Image: ARNOLD UMFORMTECHNIK)

But by optimising fuel consumption and discovering new and innovative drive concepts, it has been possible to achieve a significant reduction in CO_2 emissions - from around 175g CO_2/km in 2000, to 140g CO_2/km in 2010, and down to 95g CO_2/km in 2020. This trend needs to continue over the next few years if in future we are to achieve our climate protection targets.

Sustainability is also a huge topic for the ARNOLD GROUP from Germany. Sustainability is one of five strategic approaches employed by the fastener manufacture - along with emobility, internationalisation, lightweight engineering, and digitisation.
The experts at the company are well aware that all along the value-added chain every product has its own footprint. At each part of the supply chain emissions are calculated and added up. This means that downstream companies

Image 2: ACO_2 Save and the change in production technology that it entailed, made it possible to achieve the savings potentials for Germany and to reduce the CO_2 emissions that arise in producing the screw by some 45 per cent.
(Image: ARNOLD UMFORMTECHNIK)

in the supply chain take on the totalled emissions from their own suppliers and then pass them on, with their own CO_2 emissions added on, to their customers.

ACO_2 Save provides many options for CO_2 savings

This is why Arnold has set up the ACO_2 Save initiative. (The A stands for Arnold). The initiative actively helps customers to reduce their CO_2 emissions by ensuring that fasteners and cold-form parts are designed and implemented sustainably. A carbon calculation takes place as early as the development stage. Using its own CO_2 calculator - developed in house - Arnold is able to determine the Product Carbon Footprint for the part the customer is enquiring about, and can then work with the customer to improve it. The aim here is that at the end of the development process, the product is technically of high quality, and optimised with regard to costs and its CO_2 footprint.
The components of the tool are: CO_2-optimised engineering assisted by digital forecasting tools, a CO_2 optimisation analysis by looking at a possible change in production technology or changing the fastening technology, as well as by using innovative fasteners or systems.

To show exactly how this ACO_2 Save initiative is working, let us look at a specific example: A special screw made of aluminium, with a volume of 8,733mm³ and weighing 23.5g, was being machined in the traditional way. A blank turned part was used on the production line and the volume of that was 25,630mm³, weighing in at 69.2g each item. An ACO_2 Save analysis found that the part could be changed to a formed part from the Conform range. As a result, the volume of the formed blank was now 9,135 mm³ and each one weighed 24.82g. Besides a considerable improvement in costs created by lower materials requirements for the cold-forming process, this also has a considerable effect on the product carbon footprint for this special screw.

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The ARNOLD GROUP – BlueFastening Systems
With a foundation of many years of expertise in the production of intelligent fastening systems and very complex extruded parts, the ARNOLD GROUP has developed over a number of years into a comprehensive supplier and development partner for complex fastening systems. With our new positioning of "BlueFastening Systems" this development process will now continue under a united and harmonised structure. Engineering, fastenings, and functional parts, together with feeder processing systems, all from a single source – efficient, sustained and international.
Since 1994 ARNOLD has been part of the Würth Group.