

LESS POLLUTING CARS NEED COPPER

The clean car is important for our future. This is because over a quarter of greenhouse gas emissions are from transportation, mainly as a result of CO₂ emissions from automobiles. The European Union will not be able to cut its emissions, in line with its commitments under the Kyoto Protocol, without the widespread use of less polluting cars in which copper-based technologies play a key role.

Copper in electronics: helping cars pollute less

The first step is to improve existing systems in order to make current cars pollute less, by controlling their fuel consumption and their emissions of polluting gases. Fuel injection plays a key role, thanks to electronic applications in which copper is an essential material. In that regard, a study carried out by the NFO Infratest Agency¹ shows that direct injection systems are highly dependent on the quality of the electrical control, thus on copper. The European Union and the European Automobile Manufacturers Association (ACEA) moreover reached a voluntary agreement in July 1998 to cut CO₂ emissions in 2008 vehicles by 25% compared to the 1995 level (i.e. 140 g/Km compared to 186 g/Km) and by 35% by 2012.

Copper and electric motors: for cars of the future

But the clean car of the future will be of a new type with an alternative propulsion system. Besides biofuel, natural gas and hydrogen based systems and fuel cells, electric motors offer very promising technology. Thanks to its remarkable conductivity (the best of all non-precious metals), copper plays an essential part. The transition technology that manufacturers have focused their development on is the hybrid car that combines, in the same vehicle, an electric motor and a combustion engine. The system, in fact, offers a solution that meets the requirements for lower energy consumption and CO₂ emissions and for autonomy. Hybrid vehicles use large electric motors or powertrains that can each contain up to 12 kg of copper, not to mention the dozens of tiny motors that manage the comfort and technological functionality of modern cars. It should be noted that copper is 100% recyclable, without any loss in quality or performance.

Improving cars, an essential precondition for cutting greenhouse gases

Carbon dioxide (CO₂), in particular generated through the use of fossil fuels, is one of the planet's most serious environmental problems and, in 2000, represented 82% of greenhouse gas related emissions in Europe².

Under the 1997 Kyoto Protocol, the European Union undertook to cut greenhouse gas emissions, during 2008 to 2012, by 8% compared to 1990 emission levels. To meet these targets, action is essential in the field of transportation - by improving fuel consumption, by cutting vehicle emissions and by developing new types of clean propulsion.

Used in almost every mechanical and electromechanical component in vehicles, copper and its alloys are used to improve overall vehicle, while retaining sufficient mobility

About European Copper Institute: *The European Copper Institute is a joint venture between the world's mining companies (represented by the International Copper Association, Ltd.) and the leading European fabricators. Its mission is to promote copper's benefits to modern society across Europe through its Brussels office and its network of eleven Copper Development Associations.*
www.eurocopper.org

¹ Study by the NFO Infratest Agency, August 2002

² Source: European Environment Agency

Further information: European Copper Institute

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