



## Taking account of glazing's role in reducing CO<sub>2</sub> emissions from the car fleet Proposal for a regulation COM(2012) 393 final

Under regulation EC 443(2009)<sup>1</sup>, the EU-wide CO<sub>2</sub> emission target for passenger cars is currently set at 120 g/km. This target must be met through improvements to power train performance, as measured by the NEDC test cycle, and credits obtained via the eco-innovation scheme. In addition to these tools, 10g CO<sub>2</sub>/km are meant to be saved by way of complementary measures.

A similar regulatory infrastructure is proposed under the new EC proposal - COM(2012)393 - article 1 of which sets a target of 95 g CO<sub>2</sub>/km as average emissions for the new car fleet.

High-performance glazing technologies, in particular solar control glazing, can contribute to reducing CO<sub>2</sub> emissions generated by light duty vehicles, which are equipped with mobile air-conditioning systems (MAC). Nevertheless, despite the complex policy architecture described above, to date no regulatory incentive exists to encourage car manufacturers to embrace this fuel and CO<sub>2</sub>-saving technology.

**Glass for Europe calls on policy makers to re-think the existing policy architecture on CO<sub>2</sub> emissions of vehicles, as existing instruments create too many loopholes.**

**Glass for Europe takes the view that European decision makers should:**

- ✓ **support a review of the test cycle to better reflect real-driving conditions and**
- ✓ **call for a rapid review of the eco-innovation scheme** to ensure that, until the benefits of CO<sub>2</sub> saving technologies are adequately reflected in official CO<sub>2</sub> emissions data, these technologies can qualify as eco-innovations.

### Executive summary

- ✓ To date, there are **high-performance glass technologies available on the markets that help reduce the fuel consumption and CO<sub>2</sub> emissions of vehicles.**
- ✓ Since **emissions from air-conditioning systems are not accounted for in the NEDC test cycles**, car manufacturers are not ready to invest in these products as they prefer to focus investment on technologies that allow them to meet their CO<sub>2</sub> binding targets.
- ✓ **Due to regulatory loopholes, to date no regulatory instrument can be activated** to support the market uptake of these CO<sub>2</sub>-saving glass technologies
- ✓ **Glass for Europe calls for the eco-innovation scheme to be opened up to provide immediate support for the uptake of these glass technologies, until concrete complementary measures are put in place or until real-driving emission test cycles become applicable.**

#### About Glass for Europe

Glass for Europe is the trade association for Europe's manufacturers of flat glass. Flat glass is the material that goes into a variety of end-products such as windows and façades for buildings, windscreens and windows for automotive, solar panels, furniture, electronics, etc. Glass for Europe has four members: **AGC Glass Europe, NSG Group, Saint-Gobain Glass/Sekurit** and **Sisecam/Trakya Cam** and works in association with **Guardian**.

<sup>1</sup> Regulation EC 443(2009) setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles.



## ***The role of solar control glazing in reducing CO<sub>2</sub> emissions from vehicles***

Solar control glazing is a range of advanced glass products that provide not only good visibility and durability but also attenuate solar heat gain. Glazing with advanced solar control properties substantially reduces heat build up inside vehicles<sup>2</sup> and therefore either reduces the need to air condition the vehicle or helps considerably lower the load on the air-conditioning unit.

Studies have shown that reducing a standard vehicle's thermal load by 5% reduces energy consumption of the MAC unit by 10%. Given that solar control glass can contribute to reducing inside cabin temperatures by more than 10%, it has the potential to improve overall fuel consumption efficiency by 2% and up to 4% in some cases<sup>3</sup>.

Although solar control technologies are readily available to automotive manufacturers, most new cars are not yet equipped with these glass products. The main reason for this is simple: today, air-conditioning use and the related fuel consumption, and CO<sub>2</sub> output are not taken into account in official vehicle data. Consequently, there is no incentive in Europe for manufacturers to use this glass technology. In the US however, CO<sub>2</sub> credits from the Environmental Protection Agency can be obtained for the use of advanced solar-control glazing.

## ***Which regulatory loopholes exist in the EU and how can they be tackled?***

### ***The NEDC test cycle***

The fuel consumption and subsequent CO<sub>2</sub> emissions generated by vehicles are calculated using the NEDC test-cycle. Like any standard the NEDC test cycle establishes a certain number of conditions and parameters; however these do not reflect the exact conditions of vehicle use. For instance, it does not include any assessment of the car when the air-conditioning system is on. The CO<sub>2</sub> savings potential of solar control glass technologies is therefore not reflected in the data generated by this test cycle.

- ⇒ A review of the NEDC test cycle to better reflect real driving conditions, including the use of air conditioning, is needed over the long term. This would help reduce the gap between the test cycle data and real-life measurements.
- ⇒ The review of the NEDC test cycle is an extremely lengthy and contentious process that is unlikely to be concluded for a number of years. Until a new adequate test-cycle is agreed, alternative policy instruments must be made available to promote the uptake of CO<sub>2</sub> saving glass.

### ***Complementary measures***

Under regulation EC 443(2009), savings of 10 g CO<sub>2</sub>/km must be met through complementary measures, as part of the EU's integrated approach. In this context, the European Commission is developing a test procedure to assess the fuel consumption generated by the use of MAC. This test procedure should incorporate the benefits of most advanced solar control glazing technologies and reflect their benefits in terms of fuel and CO<sub>2</sub> savings<sup>4</sup>. Upon adoption, this test procedure would be mandatory for car manufacturers, which would have to run the test and incorporate the fuel consumption data in their type approval registration dossiers.

- ⇒ Glass for Europe welcomes this development, but stresses that setting a MAC test method cannot be considered as a complementary measure in itself, as it will not provide any regulatory or market

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<sup>2</sup> The reduction in temperatures tested in a sedan car exposed to sun reached an average 7°C in the cabin, nearly 9°C at the driver seat and 14,6°C on the instrument panel surface. Source: National Renewable Energy Laboratory, Dr. Robert Farrington – An Overview of Vehicle Test and L's A/C Fuel Use Reduction Research – 2007.

<sup>3</sup> Sources : B. Taxis-Reischl & Fa. Behr - Energieverbrauch Klimaanlagen und Wege zur Verbrauchsreduzierung - 1997.

<sup>4</sup> This assumption is based on the latest proposals from the consultants and the EC. It remains to be approved.

**incentive for energy-efficient systems.** Including the test data in the registration dossier will have no impact on consumer choices, as car buyers will not look for this data or choose their preferred car on this basis. For their part, car manufacturers will not invest more in these efficient technologies as they do not help them achieve their CO<sub>2</sub> binding targets.

- ⇒ In order to provide real incentives, specific complementary measures are needed to deliver the identified CO<sub>2</sub> savings potential linked to MAC. In the opinion of Glass for Europe, until the data from the MAC test procedure are added to the NEDC values, innovative technologies allowing a reduction of CO<sub>2</sub> emissions from air-conditioning should/must qualify for eco-innovations.

### ***The eco-innovation scheme***

Upon application by a supplier or a manufacturer, CO<sub>2</sub> savings achieved through the use of innovative technologies can be taken into account, i.e. discounted from the value obtained by way of the NEDC test cycle. This instrument therefore provides a powerful incentive to car manufacturers to use these technologies. The eco-innovation scheme is only applicable to technologies which are not covered by the test cycle or by a complementary measure (*see above*). Detailed criteria exist and a lengthy application procedure is in place. In fact, due to the complexity of the scheme, only three applications have been submitted, and only one granted so far<sup>5</sup>.

To date, solar control glass technologies cannot apply for eco-innovation status, mainly/primarily because these glass technologies have an impact on the consumption of the MAC system, which is supposedly covered by a complementary measure. As explained above however, no complementary measure is yet in place and the ones envisaged so far would not provide a genuine incentive. Additionally, overly restrictive assessment criteria prevent the glass industry from applying for eco-innovation status.

- ⇒ The eco-innovation criteria and procedure are too restrictive and complex. Glass for Europe is of the opinion that this scheme needs to be re-visited to allow a greater number of applications to support the market uptake of innovative technologies. *See paper on eco-innovations.*
- ⇒ So long as energy-efficient mobile air conditioning and solar-control glass are not covered by a regulatory measure that adequately reflects their CO<sub>2</sub>-saving benefits, be it by way of a new test cycle or a concrete complementary measure, these technologies should be eligible under the eco-innovation scheme.

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To date, no regulatory instrument supports the market uptake of a proven and recognised CO<sub>2</sub>-savings technology in automotive, i.e. solar control glazing. This is all the more regrettable as this technology is readily available in the market and can easily be integrated by car manufacturers.

This situation has arisen because of regulatory loopholes that could be fixed by way of a short-term measure that would be withdrawn as medium and long-term solutions are put forward<sup>6</sup>.

1. In the short term, **the eco-innovation scheme needs to be re-visited** to allow promising technologies not otherwise regulated to be eligible.
2. Once the MAC test procedure is finalised, **a concrete complementary measure should be developed, such as integrating the MAC data into the overall fuel consumption** of vehicles.
3. In the longer term, **existing test-cycles that concentrate on power train performance need to be re-visited to better reflect real driving conditions**, including the use of air-conditioning.

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<sup>5</sup> Of the three applications received by the EC, only one from Audi was granted so far. The other two applications are still being considered.

<sup>6</sup> The eco-innovation status would cease when other measures are in place so as to avoid double counting of the CO<sub>2</sub> saving benefits.