

## SOCIETAL IMPACTS

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Increasing congestion will lead to the fitting of on-board computer location devices to enable better route choices.

Safety and security legislation will ensure that immobilisers and driver and passenger airbags become standard, and there are likely to be external equivalents for greater pedestrian protection.

If all these current options become standard then the number of product variants could decrease.

## THE IMPACT ON THE 3DAYCAR

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The effects of such changes on a 3DayCar are as follows:

- Fuel technology will have little impact.
- The use of alternative, lighter body structures opens up the potential for design for manufacturing advantages and customer order lead time reduction.
- Design to facilitate disassembly could detract from the current increasing use of modules in simplifying vehicle assembly. Since a 3DayCar is facilitated by less complex assembly processes, the requirement to take into account the end of a vehicle's life in product design for

assembly may present a barrier to modular production and the use of composites.

- The trend towards globally harmonised standards and 'other options' becoming standard will aid the reduction of product variants and will, therefore be of benefit to the rapid build to order process.

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In conclusion, there is little evidence to suggest that environmental legislation affecting new vehicle standards and design parameters will make producing a 3DayCar significantly more difficult than at present. In fact, there may be opportunities to be gained by adopting the more radical technology being forced by some of these policy trends.

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## EXECUTIVE BRIEFING

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# Environmental Regulation and the product

*'The impact of standards and policies'*

*By Joe Miemczyk, M.Sc.*

The auto industry is constrained in the type of cars it can produce by environmental requirements to minimise the impact on human health and natural resources. These requirements are becoming more stringent with significant objectives for this decade relating to green house gas emissions, toxic emissions and recycling.

Fuel efficiency objectives and emissions reductions will not inhibit the 3DayCar. In fact, new vehicle design driven by these requirements could actually facilitate it, such as lightweight spaceframes and standards' harmonisation.

Design for disassembly however needs to cater for quick assembly as well as easy removal!

## BACKGROUND

Motor manufacturers take account of the wider needs of society in many ways: some voluntary, but mostly as a result of regulation and policy. In particular, environmental standards are imposed to ensure that the motor vehicle serves the needs of the customer without compromising the wider needs of society with varying degrees of success. Manufacturers accommodate these requirements by designing products which conform whilst satisfying the fundamentals of quality, cost and time by using well developed tools and techniques.

## THIS REVIEW

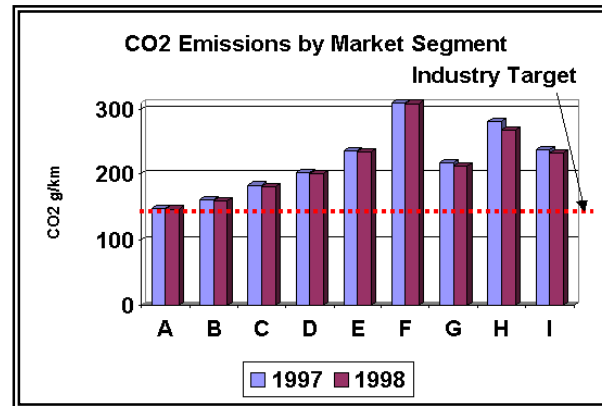
The aim of this review is to understand whether anticipated changes in product environmental specifications could compromise the ability to achieve a 3DayCar in terms of increasing lead times or product complexity. Literature based sources have been reviewed and representatives from manufacturers and other experts questioned in order to understand these implications.

## CURRENT PLANS

The most significant developments that are likely to occur by 2010 are:

- The requirement to increase fuel efficiency by 25% and obtain a

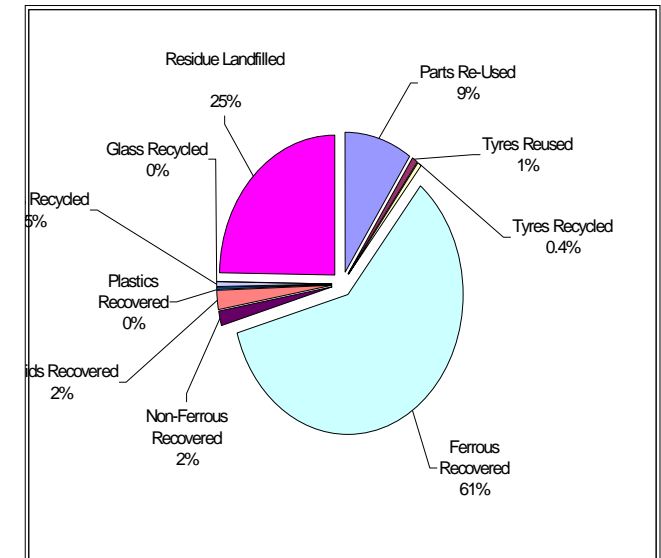
comparative reduction in greenhouse gases, together with increasingly stringent standards on other areas of exhaust emissions will lead to:



- An increase in the number of vehicles running on diesel, which will have to be low-sulphur. These vehicles will have to be fitted with particular traps, nitrous oxide catalysts and on-board diagnostic systems.
- A move towards alternative fuels, particularly LPG and CNG. The number of fuel cell and hybrid (petrol/diesel-electric) vehicles will also increase but at a slower rate. They will only achieve significant volume by 2020.
- Eco-labelling of cars to identify their 'environmental cleanliness' together with low emission zones which would only allow access to 'clean' vehicles. If these start to significantly influence consumer buying behaviour then these aspects could truly become a competitive issue, especially if there are substantial differences in the ability of VMs to deliver a cost effective solution.

## MAJOR IMPACTS

- A growth in the use of lightweight material and alternative lighter forms of body structure, such as the spaceframe, which will allow better fuel efficiency.
- The requirement for manufacturers to be responsible for 85% recovery levels at the end of vehicle life (moving to 95% after 2010), so that manufacturers will need to facilitate easy disassembly in their product design.



- In addition, materials must be used for which there is a recycling market or which are re-usable at a cost effective rate to make it viable for manufacturers to offer free take-back of all end of life vehicles.