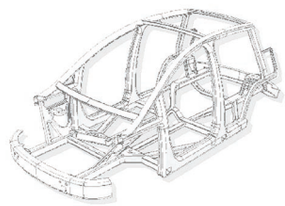
How could the automotive industry of the future achieve 'made to order' cars? **Dan Rogers** reports

Customer driven



The relationship between the consumer and a business has undergone a marked change in recent times. Whereas it was once sufficient to provide a standard product that consumers would buy en masse, the market has been altered significantly in the modern age. The explosion of Internet shopping and the delivery of niche and even bespoke products, designed to match a customer's wants and needs has created a marketplace where the balance between companies responding to and dictating what the consumer wants has tipped towards the former. Now more than ever, the mass market expects to be able to get exactly what it wants, and industry is required to be able to respond, using flexible, rapid production and delivery processes.

Is such a policy possible in the automotive industry though? While car companies cannot be criticised for not accommodating customer demands - as the plethora of gadgets and accessories that can be added to any new vehicle by a car dealership will testify - the automotive industry is still built on the principles of mass production. Indeed, the automotive industry is arguably the symbol of modern mass production, with the Model T Ford ushering in an age of mass-produced, luxury products in the early 20th century.

Yet a new EU project envisages customers walking into car dealerships within a decade, ordering the car they want - with specific demands for a range of features - and receiving it just five days later. But is it really possible?

Initiative

The Five Day Car Project is being undertaken by the EU-wide Intelligent Logistics for Innovative Product Technologies (ILIPT) team - which consists of 27 organisations, including BMW, Daimler, Continental and the University of Bath - with the aim of revolutionising the process by which automotive companies deliver their vehicles. The initiative aims to devise a system whereby a customer can place an order for a vehicle, which could then be delivered in less than a week. This highly organised process could be changed, to make the overall process of vehicle production and sales more efficient and customer-focused, as Glen Parry, a Senior Fellow at the University of Bath, explains.

"Typically on the forecourt, you have an awful lot of finished products," he states, "but that is the worst place to have the product that you then need to sell."

This situation is not ideal for the company nor the customer. "The dealer is sat on cars he hasn't sold yet," adds Parry, "and when the customer comes in thinking of the car they want, both of them have to negotiate and come to a deal."

In this scenario, the customer is only "probably happy," admits Parry, while the dealer "hasn't maximised profit."

Ideally, a customer would be able to get the product they want, and the company would be able to deliver it. "Companies want

An illustration of a car that is rapidly constructed from pre-formed modules

the customer to have paid for something before it is finished," notes Parry.

However, how can this be achieved in the automotive industry, where mass production meets a myriad of different personal tastes in vehicle design and function?

According to Parry, a combination of an integrated supply chain and innovative use of modularity in vehicle construction is the answer.

"We're developing software interoperability systems to integrate the dealer," says Parry. This means that customers could bring their order to a dealer, who could then search through suppliers of the required parts - wheels, interiors and so on - and put together an order that is synchronised for swift delivery. "The dealer would put a demand into the virtual order system," Parry continues, "and they could see if the wheel or seat manufacturer, for instance, have the capability to make these to order."

Such a rapid response technique would be made possible by innovatively using modular vehicle parts that could be combined in a number of different ways. Customers could then order from this flexible system, selecting the parts of the car that they want and receiving it just days later.

Selection

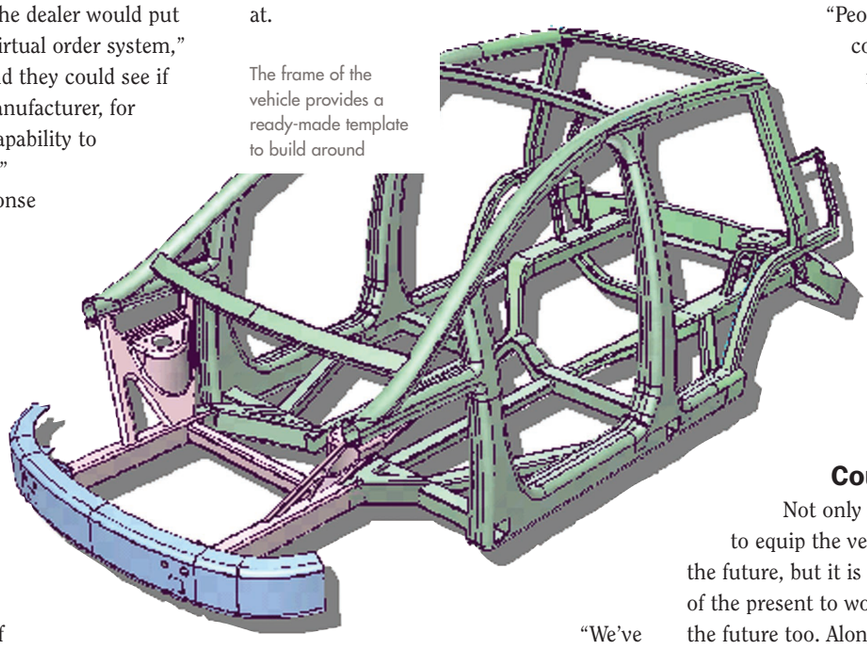
The system stamps out the 'body in white' monocoque, and uses the same front 'greenhouse' for the car's variations. A rear can be chosen, based on the customer's selection (a convertible, or an estate, for example), and a plastic body skin is placed over this steel frame, again dependent on the customer's preferred finish. Interiors can then be added in a similar fashion, integrating the customer's selection of accessories and gadgets too.

"Doing these things gives you a more rapidly adaptable car," notes Parry.

And such an approach is a natural progression for the automotive industry, argues Parry. "We've really laid the ground rules for this concept - the companies involved can see this as a common goal," he comments. "Sharing an underpinning module for different models is already creeping in, and OEMs are thinking, 'we could do more of this'."

Validity

The third key stage of development for such a consumer-focused system, of course, is validating the interoperability of the order process and the modular production systems. It is an area that Parry and the team at the University have been looking at.



The frame of the vehicle provides a ready-made template to build around

"We've been looking not just at theory, but also the practical side," he explains. "We're building a dynamic, rapidly modelled supply chain that can say, 'this seat manufacturer can't meet this demand, but this one can, and order and put together what the customer wants."

Moreover, the financial incentive is to maximise the profit that can be made from the business of selling vehicles - little negotiation is needed when a product is exactly what the customer wants - and the system, in delivering on said demands, becomes more functional. Added to this are the environmental benefits of a 'made to order' system: with carbon-intensive elements, such as the paint shop, no longer intensively used in the paintless film moulding of the bodywork, as well as products not being transported around unnecessarily; and the social benefits of keeping work within the EU - key to a rapid response supply chain.

With these benefits in mind, it is little wonder that the system is already becoming more central. "We have been doing use cases and applying build to order concepts," Parry states. "It's being adopted now and by 2012 to 2015, I would hope some car manufacturers would have it significantly embedded."

The research is now looking at how these methods can be made, essentially, 'future-proof'. Parry gives the example of MP3 players driving long-term thinking. "People now demand iPod connectivity, and companies are looking at retro-fits. But how long is the iPod going to be the flavour of the month? Any socket would become redundant. We need to look at how electronics can integrate customer expectations."

Course

Not only is the University looking to equip the vehicles of the present for the future, but it is training the students of the present to work in the industry of the future too. Alongside the Five Day Car Project, the University is also running an MSc in Innovation & Technology Management, which it will launch in October. The programme is designed for graduates from a range of disciplines, who wish to develop an in-depth understanding of innovation and technology management concepts and the skills to apply these to real life. "We're making students think about how you truly understand customer value," says Parry. And marrying engineering and management will be crucial to the automotive industry of the future, as Parry sees it. "This is no longer a cost and engineering world," he asserts. "How do you innovate, manage technology and supply, and see potential, if you can't bridge that gap?"

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