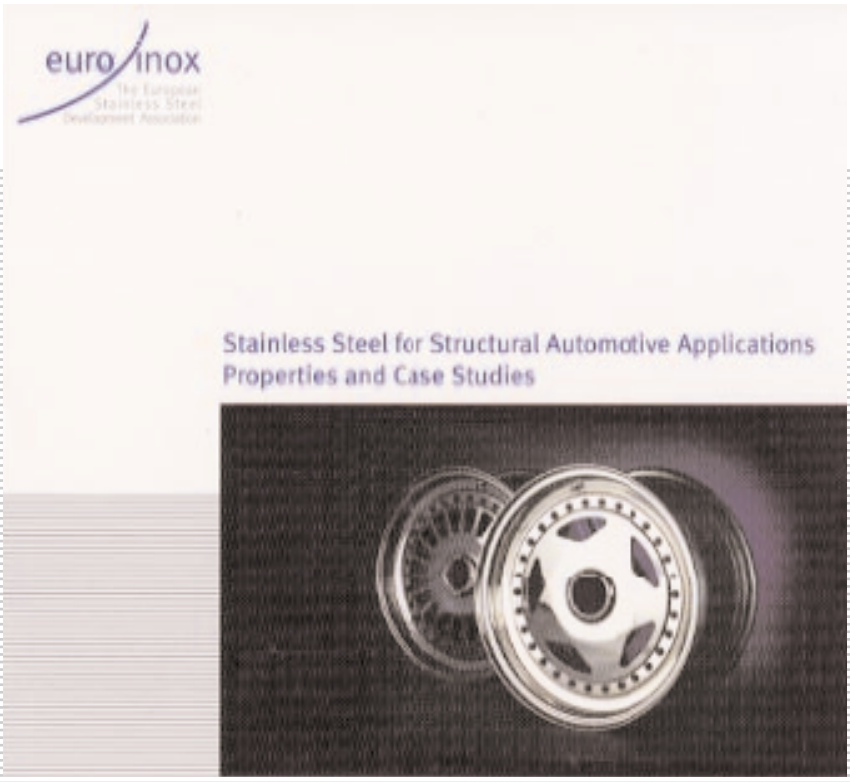
euro inox
The European Stainless Steel Development Association

Stainless Steel – A Structural Material for Passenger Cars of the 21st Century

Pascal Payet-Gaspard, President, Euro Inox, Brussels, Belgium

Paper on the occasion of the Euro Inox presentation
Stainless Steel in Structural Automotive Applications
– Properties and Case Studies –
at the Paris Motor Show Mondial de l'Automobile, 2nd October 2000



There are few high tech materials that are so common in our personal environment as stainless steel. We generally associate them with high quality consumer goods, kitchen utensils, knives and forks, domestic appliances, where we buy it because it can stay beautiful forever.

We also use stainless steel extensively in industry. The chemical industry and food processing are most significant examples. Here we use stainless steel because it resists to corrosive attacks that other materials could not withstand.

Stainless steel is now also common in passenger cars, and here mainly in the exhaust gas system with its critical corrosive conditions. It is also used in airbag inflators, safety belt retractor springs which have to fulfil their life saving function throughout more than a decade without any servicing.

But why should we use stainless steel in an automotive structure? Unless he is a collector of veteran cars, the customer does not even want the car to last forever, and neither does the manufacturer. But what does the market want?

The race for innovation today is about lighter cars that are more fuel-efficient. The fuel shortages of last September have again shown dramatically how precious a resource fuel is and that the pressure will increase to use it sparingly. And to achieve this, first and foremost, we need lighter cars.

The customer wants at the same time more comfortable cars. Air conditioning, electric windows and seats are now standards features also in Europe. But the more weight we put into extras, the stronger the pressure will get to reduce weight in the load bearing structure and in the outer shell.

The customer wants safer cars. The statistics of casualties over the last 50 years show a dramatic decrease, which is related to new designs and a more intelligent use of materials. Here again we are not at the end of a conceivable development, and we can make further strides as will be shown in the 3rd paper of today.

The market wants affordable cars. This is why new technologies must be compatible with the needs of volume production.

The market wants environmentally friendlier cars. For passenger cars as the most important volume product of today's industrialised world, the reduction of the waste stream is paramount. A material that lasts, like stainless steel, is by definition ecologically superior. Stainless steel is not only recyclable in theory, which in fact many materials are, but it is almost fully separated and reused because it contains valuable alloying elements which make recycling profitable.

Stainless steel can do a lot to make modern passenger cars better, but automotive designers do not generally know its properties. This is why the European stainless steel industry decided to make a common effort. As a platform, the European stainless steel producers used their market development organisation, Euro Inox in Brussels. As a first activity, they decided to put together the knowledge currently available on stainless steel in automotive applications. These were to be made available to automotive designers. Research archives were opened, previously unpublished material was compiled and combined into a new technical document which is presented to the automotive world with the new CD ROM *Stainless Steel for Structural Automotive Applications – Properties and Case Studies*.