

# The future of the automotive industry

The key to meeting fuel efficiency and emissions regulations



The automotive industry has only a few years to drastically rethink the way vehicles are engineered and manufactured.

> Meeting the mandates of rigorous fuel economy and emissions standards is creating unprecedented and fundamental change. To succeed, automotive companies must redesign their vehicles NOW.

**Need lower-cost** automobiles

Automotive companies report fuel efficiency and emissions regulations are the #1 pressure

Seek differentiation with high quality and performance

#### The global race to bring lightweight vehicles to market

Automotive companies must meet average fuel economy mandates

Lightweighting vehicles is directly linked to lower CO2 emissions and improved fuel economy. Reducing a vehicle's weight by 450 kg (1000 lb) enables an average reduction of 40 g of CO2/km and increases fuel economy by 8-12 percent. Meeting the fuel standards will require automotive companies to nearly double the average fuel economy of new cars by 2025.



### **Time is running out** to plan lightweighting strategies

Automotive companies respond by planning now



Recognize lightweighting 

Identify reducing vehicle 460000 require reducing vehicle weight as the top challenge for meeting fuel efficiency and emission standards

## The impact of new material strategies The solution BBC BC BC Have or will develop new material strategies Have or will Plan to use mixed 5400 materials, including composites, to produce lightweight At least vehicles 40% lighter



Vehicle with traditional materials Vehicle using alternative materials

#### The benefits of using specialized engineering tools

Many predict that 340 to 450 kg (750 to 1,000 pounds) must be removed from a typical sedan to have a shot at meeting the fuel standards. In order to meet such dramatic weight reduction and global regulations, automotive companies will require new technologies, including alternative materials, specialized engineering tools and nontraditional manufacturing processes.

139% greater weight reduction over the last 2 years

119% more likely for manufacturing and engineering to collaborate

to improve restructurability

54%

more likely to have already started prototyping vehicles using new material strategies



### 112%

more likely to have visibility into weight impact of each car component to support better decisions during design

#### 72%

more likely to conduct what-if scenarios to assess the impact of carbon fiber on strength, weight and cost

the next 8 years

31% more programs using new material strategies within

Results from Aberdeen Group study, October 2013

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