

## ■ Market segment dynamics

The segment of innovative materials especially meets the requirements of manufacturers of transport materials: weight increases, increase in shock resistance and recycling obligation.

In France, 2,000 companies are involved in this market segment, which employs more than 300,000 persons and generates 43 billion euros of turnover.

The automotive sector is the main field of application. Faced with carbon emission regulations, manufacturers are reducing the weight of their vehicles in order to reduce the consumption of fossil fuels.

France is the 5th leading manufacturer of automobiles in the world, and the automotive industry is the leading client of many sectors such as metal work, plastics, and industrial rubber. Some 150 different plastics are currently used in a vehicle, a figure that could exceed 200 in the years to come, especially with the introduction of bio plastics: bio thermoplastics and thermosetting resins with natural fibres.

In the aerospace manufacturing sector, the permanent requirements for weight reduction and reinforcement of structures lead to the increasing use of composites: to a lesser degree, shipbuilding and construction of pleasure boats are also natural market opportunities for innovative materials.

To meet these markets, France has well-known leaders in this sector. In the automotive industry, for example, these include: Plastic Omnium (plastic materials) and Arcelor (steel). Many foreign companies are present in France in the field of automobile materials, including Johnson Controls, Magna, Visteon and Thyssen Krupp.

## ■ France's attractiveness

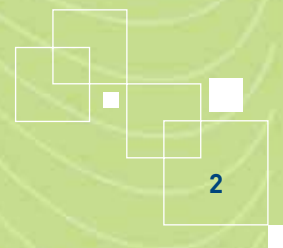
France has key manufacturers in the field of transport: PSA, Renault, Airbus, and also large equipment and plastic manufacturers: Arcelor, Faurecia, Plastic Omnium.

European standards have led to increased requirements in the field of materials in France. The Directive on vehicles off the road, created in 2000, stipulates the conditions and obligations for automobile manufacturers, and also for players involved in the sector of vehicle recycling at the end of useful life.

The transposition of this directive is complex, as it involves many players. For 2006, it fixed a rate of 80% for reuse or energy conversion in vehicles and an objective of 95% for recycling for 2015.

To meet these requirements, competitiveness clusters have been created in order to accelerate research in the sector of materials. The multiple-sector cluster (aeronautics, automobile, naval, boating) in the Loire region, called EMC2, represents the collaboration between companies, research institutes and schools in the field of materials, with research studies for large complex composite parts for transport, multi-material assembly, and incremental forming. Other clusters are dedicated to materials, such as the Rhône-Alpes cluster specialized in plastics.

France is also intensifying its support for research through interesting tax incentives such as the research tax credit.



## ■ International players in France

- Plastic Omnium is currently ranked 2nd worldwide for plastic products for automobiles, with a turnover exceeding 2.3 billion euros and a two-digit growth rate.

Plastic Omnium is developing its research in the field of nanocomposites, to obtain reinforced plastics, and metal-plastic hybrids that are supple and resistant. To this end, Plastic Omnium which dedicates 6% of its turnover to research and development, has opened a R&D center at Lyon, E-Sygmatec.

- Toray, the Japanese company specialized in the production of carbon fibres, set up operations in the Aquitaine region in 1982 by acquiring a majority stake in the Soficar company, in order to supply parts to Airbus. This company, which currently has 160 employees, has experienced major growth, especially in the Airbus A380 market, which uses a significant amount of carbon fibres. A new production line was launched in 2004, and the company decided in 2005 to further increase its production, as the world market is experiencing extreme short supply.