

A «low cost» carbon fiber for a more intensive use of composites

Project FORCE II



The objective is to obtain a low cost carbon fiber under 8€/kg with mechanical properties of 250GPa for Young's Modulus and 2500MPa for Tensile strength. New precursors, as alternative to PAN, are evaluated: bio-sourced raw materials such as lignin and cellulose and polyethylene at laboratory and pilot scale.

Technical and economic impacts

- ▶ Reduction of CO2 emission for automotive sector and sports and leisure
- ▶ A more intensive use of composites
- ▶ Give birth to a new French economic carbon fiber sector

Keywords

Carbon fiber // Economic // Alternative material // Composites



INDUSTRIAL CONTEXT.....

The poly-acrylonitrile, reference precursor used today and one of the major contributors of its cost structure, turns out very too expensive for the requirements of the car industry. We estimate to be able to divide by two this cost by resorting to alternative materials, such as the lignine or the cellulose or still the polyoléfines, and by improving the manufacturing processes.

The optimization or the abolition of certain stages of the manufacturing process, like the phases of stabilization, oxidation or of graphitisation, establish other opportunities of reduction of this cost, in the same way as the important economies of scale were bound.



INNOVATIVE FEATURES

- ▶ Optimization or removal of some steps of manufacturing process, such as stabilization, oxidation or graphitization which are cost reduce opportunities.
 - ▶ Keys skills: industrials, users, producers and technical centers.
- Strong involvement, in a synchronized effort, in particular with the chemical industry.

INDUSTRIAL APPLICATIONS

This project will then be the object of an industrial validation phase which will have for objective the implementation of preindustrial lines.

Partners

- ▶ IRT JULES VERNE
- ▶ ARKEMA
- ▶ CANOE
- ▶ CHOMARAT
- ▶ DECATHLON
- ▶ FAURECIA
- ▶ GROUPE PSA
- ▶ MERSEN
- ▶ PLASTIC OMNIUM
- ▶ RENAULT
- ▶ STELIA COMPOSITES
- ▶ TEMBEC
- ▶ TOTAL

Equipment

- ▶ Carbonisation Pilot Line

Budget

- ▶ 17 000 k€

Contact projet

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