

Advanced carbon-fibre composite recycling processes



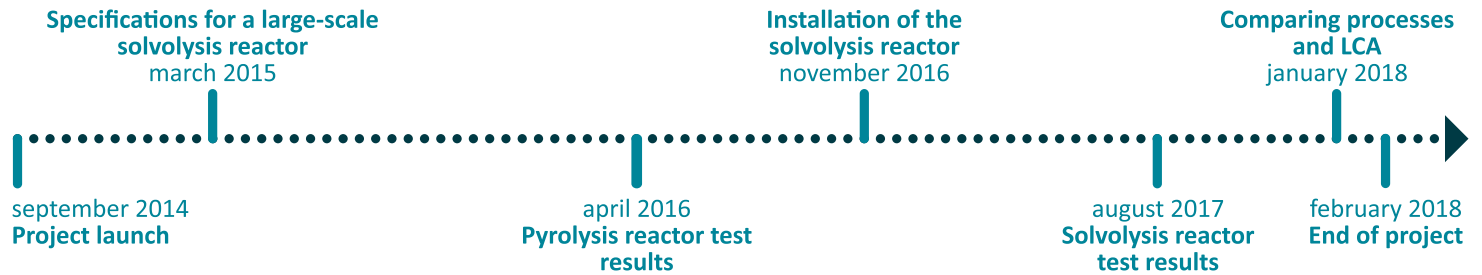
The objective of this project is to study pyrolysis and solvolysis processes to find innovative tailored solutions that will resolve the scientific and technological bottlenecks in order to further the development of composite material recycling.

Technical and economic impacts

- ▶ 50% minimum for recycled carbon fibres
- ▶ Elimination of 95% of the resin on the fibre
- ▶ 95% of the mechanical properties of a new carbon fibre

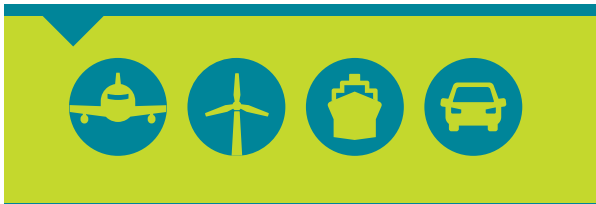
Keywords

Recycling // Composite
Pyrolysis // Solvolysis



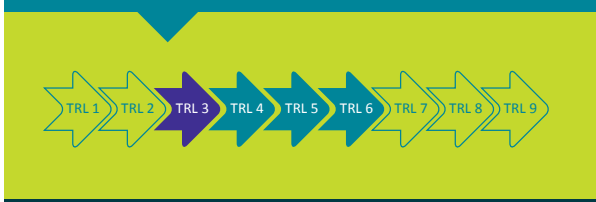
INDUSTRIAL CONTEXT

Most composite waste is either sent to waste storage facilities or incinerated. These are not sustainable solutions, due to economic, legislative and environmental obstacles, and so there is a real need to develop treatment and/or recycling processes for production scrap, offcuts from the production of composite materials, and end-of-life composite materials.



INNOVATIVE FEATURES

- ▶ Arriving at a better understanding of the degradation of carbon composite materials as a function of the processes used
- ▶ Demonstrating the maturity of pyrolysis and solvolysis processes
- ▶ Assessing the effect of operation parameters on the quality of the processed fibre as a function of the type of composite
- ▶ Life cycle analysis for each process in order to assess the environmental impacts linked to the recycling of composite materials



INDUSTRIAL APPLICATIONS

The objective is to develop composite recycling processes that guarantee consistent, controlled fibre quality at the end, controlled composition of the organic fractions, and controlled energy cost.

Partners

- ▶ IRT JULES VERNE
- ▶ AIRBUS
- ▶ OMEGA SYSTEMES
- ▶ SACMO
- ▶ VEOLIA
- ▶ ICAM
- ▶ LTN (UMR CNRS UNIVERSITY OF NANTES)

Equipment

- ▶ Reactor solvolysis large

Budget

- ▶ 1 920 k€

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