PARCCA

INNOVATIVE PROCESSES
ECO-PROCESSES

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.

IRT JULES VERNE

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

september 2014
Project launch

april 2016
Pyrolysis reactor test results

Specifications for a large-scale solvolysis reactor
march 2015

Installation of the solvolysis reactor
november 2016

august 2017
Solvolysis reactor test results

Comparing processes and LCA
january 2018

february 2018
End of project

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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