Enhanced Performance and Predictability of Recycled Fiber Reinforced Composites

MSc or Internship Assignment

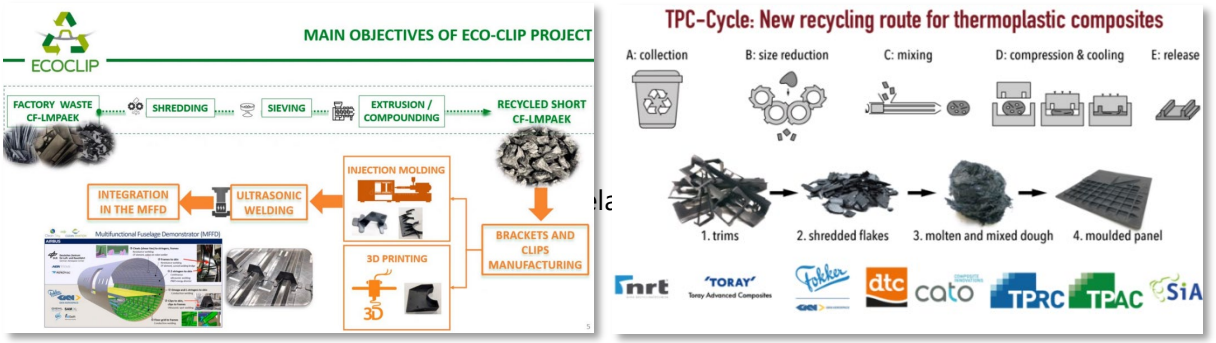
Introduction

Carbon Fiber Reinforced ThermoPlastic (CFRTP) materials offer great benefits in their application: It combines efficiency by lightweighting, and efficient large scale production and are therefore well suited towards sustainable mobility applications.

Although CFRTP materials offer a great potential to reduce the carbon footprint in their applications, the material production process is energy intensive and reliant on fossil sources. Full recycling of these materials further reduces the footprint and enables a circular economy.

CFRTP indeed allow for full recycling of both the carbon fibers as well as their thermoplastic matrix; studies and projects on recycling of thermoplastic composites have been executed to demonstrate the technical feasibility of re-using thermoplastic composites.

Further development to increase their performance and predictability of materials properties allows for actual market adoption of this recycling route.



Examples of CFRTP Recycling routes

Assignment

The graduation or internship assignment will aim at understanding the relationship between material structure, processing and performance to increase material predictability. This includes questions like: What is the influence of fiber length, ratio, and distribution on processing and performance? What is the best process, and which parameter to achieve the right material behavior? How reproducible are the results between different batches? How do we define the optimal grades for injection molding and additive manufacturing applications? And many more.

The Assignment encompasses the definition of the scope of the assignment, material processing, modelling, testing and evaluation. The work will be carried out at the labs of Twente University in close cooperation and supervision by Spiral Recycled Thermoplastics Composites.

Contact Details

Hans Luinge

Co-Founder Spiral Recycled Thermoplastic Composites

www.spiralrtc.com

+31 6 129 77 067

h.luinge@spiralrtc.com

University of Twente / PT contact : Martin van Drongelen m.vandrongelen@utwente.nl

About SPIRAL Recycled Thermoplastic Composites

SPIRAL Recycled Thermoplastic Composites is a young company, it offers a sustainable solution to realize circularity for carbon fiber thermoplastic composite production and end-of-life waste. SPIRAL collects, processes and markets these high end materials in generic recycled formats. The new lease on life for these materials in high-end applications significantly reduces the overall CO2 footprint. SPIRAL thereby closes the loop and unleashes the full potential of carbon fiber thermoplastic composites as circular and sustainable engineering materials