

ADVANCING THERMOPLASTIC COMPOSITE TECHNOLOGIES

The ThermoPlastic composites Research Center (www.tprc.nl) is an open research center for fiber reinforced thermoplastic composites. TPRC performs research in co-operation with national and international partners, such as GKN/Fokker, Toray and Boeing, on the processing and performance of thermoplastic composites. TPRC would like to reinforce its research team with an intern or graduation student on the topic of:

FORMING EXPERIMENTS ON TOOL WITH CAVITY

Project description

Several processes can be employed to produce complex thermoplastic composite parts. An example is the one-step overmoulding process. This process combines the stamp forming of pre-consolidated continuous fibre-reinforced blanks and the injection moulding of (short fibre reinforced) polymer to form a secondary fusion bonded structure over top. Unique to this process is the tool used, which contains cavities for the injection moulding features. The injection moulding compound is only injected after full closure of the mould (forming). The blank material is forced into these cavities during the mould closure resulting from the pressure gradients near the empty cavities. To study the structure evolution and to understand the driving phenomena the process conditions can be reproduced on a forming press with simple geometry tools containing cavities.

Tasks

The objective is to perform a set of forming experiments with a mould containing cavities, which is representing conditions during mould closure in a one-step overmoulding process. The parts produced can be analysed with microscopy to identify the microstructure around these cavities. Based on this driving mechanism can be identified. To this extent the following tasks have been divided:

- Produce and conduct an experimental test matrix for the described forming experiments
- Perform a microscopy study to observe the microstructure of created samples
- Analyse the produced micrographs to identify the different phenomena describing the process

Practical information

The project is to be performed within a time frame of six-nine months. You will have a desk at TPRC and receive a monthly trainee remuneration of 250 Euro. Please contact Erik Krämer (erik.kramer@tprc.nl or 0618587793) for additional information.