

Research assistant in composite manufacturing

Katholic University of Leuven
Leuven, Belgium

“Deepdrawing of textile reinforced thermoplastic composites” (project funded by FWO)

The Composites Group at the Department of Metallurgy and Materials Engineering has a **2-year vacancy for a Master Engineer** interested in composite manufacturing.

Within the project funding is available for two years. In the **framework of a PhD** (if the applicant wishes so) an extension of payment to 4 years can be expected by a grant from K.U.Leuven

Framework

In this project a software optimization tool is being developed for industry that enables prediction of fibre reorientation and shape distortions during thermoforming of textile composites. Based on these local distortions the mechanical and geometrical quality of the product can be estimated with our in-house software (TexComp).

At the moment we are developing a general material model in ABAQUS for woven thermoplastic composite forming. Material characterization and thermoforming studies are being performed to validate the material model and perform sensitivity study on process and material.

We have access to PAMFORM, a commercial explicit FE software package from ESI Group, dedicated to composite forming simulation. This software is considered to be the “state of the art” and the PAMFORM reinforced viscous material model (MM 140) serves as a reference, enabling us to derive further needs and appreciate further improvements.

Task

You will gain experience in simulation of textile composite thermoforming using PAMFORM and ABAQUS. Your focus is on assigning correct boundary conditions (BC), studying the mold shape sensitivity, ensuring validity of the explicit forming simulations. Secondly you will contribute to the development and verification of a material model of a viscous fabric in ABAQUS, implemented using a user subroutine.

Profile:

- Thorough knowledge of non-linear FE and continuum mechanics
- Experience in ABAQUS or MARC
- Programming skills in C++, FORTRAN
- Interest to link simulation with experimental results
- Dr. or Master in Applied Mathematics, Materials or Mechanics Engineering
- Interest in composite processing

Start

This position is available immediately

Contact

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Link

<http://www.mtm.kuleuven.ac.be/Research/C2/poly/index.htm>