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 Fokker, TenCate 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:

INDUCTION WELDING OF THERMOPLASTIC COMPOSITE COMPONENTS

Project description

Thermoplastic composite parts are increasingly used in the aerospace industry because of their superior stiffness to weight ratio and rapid manufacturability. A highly automatable method to assemble these manufactured parts is done by the induction welding technique. This technique is based on induction of eddy currents in the separate composite parts. These eddy currents generate sufficient heat to melt the thermoplastic matrix material after which a controlled cooling and properly applied pressure the two TPC components will be joined.

An important material property determining the heat generation is the electrical conductivity of the TPC material. Standard test methods to characterize this property for TPCs are currently developed but need further testing and evaluation.

The aim of this assignment is to obtain reliable characterization methods to determine the electrical conductivity of TPC's . The results of this research will contribute to the optimization of production processes at the industrial partners of the TPRC.

Tasks

This assignment focusses on electrical conductivity characterization methods of thermoplastic composite materials. The work includes:

- Investigating electrical conductivity behaviour within an experimental program, which includes laminate production of thermoplastic composite laminates at the TPRC
- Use and expand established methods to measure electrical conductivity of TPC's
- Evaluation of the experimental results, identifying the relation between sample geometry, fibre architecture, combined materials and measured data
- Discussion of the results in a written scientific report

Practical information

The project is to be performed within a time frame of 7-9 months. You will have a desk at TPRC and receive a monthly trainee remuneration of 250 Euro. Please contact Sebastiaan Wijskamp (sebastiaan.wijskamp@tprc.nl or 088-8773804) for additional information.