

## Probabilistic analysis of a thermosetting pultrusion process - DTU Orbit (09/11/2017)

### Probabilistic analysis of a thermosetting pultrusion process

In the present study, the effects of uncertainties in the material properties of the processing composite material and the resin kinetic parameters, as well as process parameters such as pulling speed and inlet temperature, on product quality (exit degree of cure) are investigated for a pultrusion process. A new application for the probabilistic analysis of the pultrusion process is introduced using the response surface method (RSM). The results obtained from the RSM are validated by employing the Monte Carlo simulation (MCS) with Latin hypercube sampling technique. According to the results obtained from both methods, the variations in the activation energy as well as the density of the resin are found to have a relatively stronger influence on the centerline degree of cure at the exit. Moreover, different execution strategies are examined for the MCS to investigate their effects on the accuracy of the random output parameter.

### General information

State: Published

Organisations: Department of Mechanical Engineering, Manufacturing Engineering, University of Twente, Michigan State University

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Pages: 67-76

Publication date: 2016

Main Research Area: Technical/natural sciences

### Publication information

Journal: Science and Engineering of Composite Materials

Volume: 23

Issue number: 1

ISSN (Print): 0792-1233

Ratings:

BFI (2017): BFI-level 1

Web of Science (2017): Indexed Yes

BFI (2016): BFI-level 1

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 1

BFI (2014): BFI-level 1

BFI (2013): BFI-level 1

BFI (2012): BFI-level 1

BFI (2011): BFI-level 1

BFI (2010): BFI-level 1

BFI (2009): BFI-level 1

BFI (2008): BFI-level 1

Original language: English

DOIs:

10.1515/secm-2013-0290

Source: FindIt

Source-ID: 270444494

Publication: Research - peer-review › Journal article – Annual report year: 2016