The Effect of Product Size on the Pulling Force in Pultrusion - DTU Orbit (28/12/2018)

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In the present work, pultrusion of a composite rod is simulated for various part thicknesses using the finite element method. The pultrusion process set-up is taken from literature in which the temperature and the degree of cure evolutions inside the rod were measured. The predicted temperature and degree of cure profiles in the three dimensional (3D) thermo-chemical analysis are found to agree well with the measured data. The contact pressure between the part and the heating die is calculated using a mechanical contact formulation in the 2D mechanical process model for 9 different part thickness values. Using the contact pressure distribution along the die, the process induced pulling force is predicted. For the simulated cases, a non-linear relation is found between the total force and the product size.

General information
State: Published
Organisations: Department of Mechanical Engineering, Manufacturing Engineering, University of Salerno, University of Twente
Contributors: Baran, I., Carlone, P., Hattel, J. H., Palazzo, G. S., Akkerman, R.
Pages: 1763-1770
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Key Engineering Materials
Volume: 611-612
ISSN (Print): 1013-9826
Ratings:
BFI (2018): BFI-level 1
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 0.29 SJR 0.18 SNIP 0.303
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.24 SJR 0.164 SNIP 0.257
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.21 SJR 0.173 SNIP 0.226
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 0.23 SJR 0.21 SNIP 0.34
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 0.21 SJR 0.192 SNIP 0.302
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 0.19 SJR 0.172 SNIP 0.374
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 0.22 SJR 0.177 SNIP 0.436
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.184 SNIP 0.296
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.209 SNIP 0.24
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.192 SNIP 0.283
Scopus rating (2007): SJR 0.194 SNIP 0.366
Web of Science (2007): Indexed yes