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THICKNESS VARIATION REDUCTION FOR VARTM PROCESS

By Li, Jing

Book Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | MODELING, DESIGN AND CONTROL | Vacuum-assisted resin transfer molding (VARTM), one of a commonly used composite manufacturing processes, is becoming more popular. To optimize the manufacturing process, reduce costs, and maintain consistent part quality, knowledge of mold filling, especially flow through thickness direction is required. This work investigates the mechanism of the thickness variation dynamic change during the infusion and curing/relaxing processes. A numerical model is developed to track the thickness change of the bagging film free surface. In addition, this work analyzes the sources of the uncertainties and quantifies the magnitudes of the uncertainties by error propagation theory to characterize the statistical properties of the permeability values. Factors related to the part thickness variation are identified with design of experiments method and a better tooling design is obtained by configuring the different flow media. The parameter uncertainty that leads to part-to-part thickness variation is also investigated and a stochastic process simulation coupled with optimization is effectively demonstrated. | Format: Paperback | Language/Sprache: english | 204 gr | 144 pp.



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