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Influence of fabrics' design parameters on the morphology and 3D permeability tensor of quasi-unidirectional non-crimp fabrics

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Abstract

This research addresses the effects of quasi-UD non-crimp fabric (NCF) design parameters on the fabric architecture and on the permeability tensor. These fabrics are designed for the Liquid Resin Infusion (LRI) of large and thick composite parts. Three fabrics' parameters intended to bring a flow enhancement to the NCF are investigated: the stitch spacing, the stitch pattern and the weft tow lineal weight. Image analysis is undertaken to characterize the morphology of non-crimp fabric composite. A new continuous