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Characterization of Surface Suction Grippers for Continuous-Discontinuous Fiber Reinforced Semi-Finished Parts of an Automated Handling and Preforming Operation

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Abstract : Non-metallic lightweight materials such as fiber reinforced plastics (FRP) become very significant at present. Prepregs e.g. SMC and unidirectional tape (UD-tape) are one of raw materials used to produce FRP. This study concerns with the manufacturing steps of handling and preforming of this UD-SMC and focuses on the investigation of gripper characteristics regarding gripping forces in normal and lateral direction, in order to identify suitable operating pressures for a secure gripping operation. A reliable handling and preforming operation results in a higher adding value of the overall process chain. As a result, the suitable operating pressures depending on travelling direction for each material type could be shown. Moreover, system boundary conditions regarding allowable pulling force in normal and lateral directions during preforming could be measured.

Keywords : continuous-discontinuous fiber reinforced plastics, UD-SMC-prepreg, handling, preforming, prepregs, sheet moulding compounds, surface suction gripper
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