Processing engineering of large composites structures using low-pressure vacuum infusion

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Composite materials, such as fibre reinforced plastics and sandwich panels, have considerable potential for use in the next generation of transport structures. They are lightweight, durable, and readily moulded to shape. However, there are also additional complexities associated with the use of composites, particularly in terms of design and manufacture. These complexities, together with issues of cost, are currently limiting their adoption by the transport sectors. The selection of the manufacturing process for a composite component will normally depend upon the nature of part and the required production volumes. We try to present vacuum assisted resin infusion process, suitable for low-medium production volumes (less than 500 parts per year). Vacuum infusion is well suited to large parts (greater than 1m) with intermediate fibre content (less than 35% by volume). As a reference product was selected overhead - side panel of train cabin designed like a sandwich construction with suitable foam or honeycomb core. Our experimental results described vacuum infusion process like actual variant to produce designed products to transport industry.

Keywords: vacuum infusion, matrix, sandwich construction.

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Paper number: M201219

Manuscript of the paper recieved in 2011-12-18. The reviewers of this paper: *Assoc. Prof. Dana Bolibruchova, MSc, PhD. and Prof.Iva Nova, MSc., Ph.D.*