

Abstract

A new innovative infusion technology, pulsed infusion, has been developed for the manufacturing of fiber-reinforced thermoset-based composites. Pulsed infusion is a double-bag vacuum infusion process that is based on the use of a proper designed reusable pressure distributor and able to better control the vacuum pressure in pulsed way. Thus, the transverse resin flow through the dry fiber reinforcement is promoted and a better adhesion between the resin and the fibers is achieved. The new process allows to obtain laminates with the same fiber volume fraction and tensile properties of those produced by conventional infusion technologies. An average increase up to 9% for the flexural modulus and up to 24% for flexural strength has been assessed for pulse-manufactured composites compared to traditional vacuum infusion ones. Furthermore, due to a minor consumption of resin and the absence of the distribution net, pulse infusion provides a material cost-saving advantage around 19% and a significant waste reduction.