

Fiber-Reinforced Sandwich Structures Based on Selective Laser Sintering: A Technological View

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Abstract : The demand for an increasing diversification of the product spectrum associated with the current huge customization desire and subsequently the decreasing unit quantities of each production lot is gaining more and more importance within a great variety of industrial branches, e.g. automotive industry. Nevertheless, traditional product development and production processes (molding, extrusion) are already reaching their limits or fail to address these trends of a flexible and digitized production in view of a product variability up to lot size one. Thus, upcoming innovative production concepts like the additive manufacturing technology basically create new opportunities with regard to extensive potentials in product development (constructive optimization) and manufacturing (economic individualization), but mostly suffer from insufficient strength regarding structural components. Therefore, this contribution presents an innovative technological and procedural conception of a hybrid additive manufacturing process (fiber-reinforced sandwich structures based on selective laser sintering technology) to overcome these current structural weaknesses, and consequently support the design of complex lightweight components.

Keywords : additive manufacturing, fiber-reinforced plastics (FRP), hybrid design, lightweight design

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