Hybrid reinforced thermoset polymer composite in energy absorption tube application: a review

ABSTRACT

The custom of hybridization fibre composite in energy absorption tube application has gained the attention of structural crashworthiness in composite material industry. Thus, the approach of this review is to understand the effect in hybridization within metal/synthetic fibre composite, synthetic/synthetic fibre composite and nature/synthetic fibre composite as energy absorption tube, which reflects on the energy absorption characteristics and crashworthiness behaviors in previous the study. By way of instance, a wide range of methodology and particular parameter in previous study such as the effect in fibre arrangement, matrix polymer, technique of fabrication, fibre treatment (natural fibre), design in geometry/crosssection and others mechanism of hybrid fibre composite tube are highlighted which to comprehend the capability of the mechanical performance and collapsible behavior as sacrificial structure in high-performance structure applications. Moreover, in the recently studies there have been many of the research regarding structural materials as energy absorption tube has been introduced such as metal/matrix composites, new alloy metals and polymer composites which intended to evaluate the performance of these materials into circumstance in loading and impact characteristic. Therefore, this review article is trying to explore the research articles related to the effect of hybridization fibres and thermoset polymer as reinforcement for energy absorption tube research and expected would provide an information and idea which to expend the knowledge in future study of hybridization effect for energy absorption tube, moreover the development for future potential as new hybrid composite fibre materials from the natural/synthetic fibres reinforced composite material in employing of high-performance energy absorption tube application is still less discover and highlighted.

Keyword: Energy absorption tube; Hybrid composites; Collapse behavior; Crashworthiness