

Table 3: Comparison between different configurationally specimen

Specimen	Energy absorption (kJ)	Peak crushing force(kN)	Mean force (F_{mean}) (kN)	CFE	SEA(kJ/kg)
Aluminum	2.68	39.7	20.7	0.51	18.55
Hybrid I	6.11	143	97.82	0.684	35.21
Hybrid II	2.79	130.5	64.35	0.493	21.93

CONCLUSION

The study investigates the crushing behavior of aluminum/glass fiber aluminum tubes under axial-static crushing test through that have different crashworthiness parameter were analyzed the configuration of two aluminum tubes are compared with each other with their limitation, some conclusion were drawn from the experimental details.

- (1) Glass Fiber that are used as sandwich sheet between CF and AL-out which resulted as strength factor in the sample due to its Honeycomb structure. As the glass fiber has very low crushing strength invidiously but it increase the F_{mean} , SEA values while compression of sandwich form between CF and aluminum values of sample. So it is an alternative to increase the energy absorption efficiency of structures.
- (2) The utilization of unidirectional CF sheets used to wrapping around the aluminum tube gives a huge preferred standpoint than bi-directional CF sheets in case of performance ,it permit to customize the fiber direction to strengths as per requirement and it also reduces waste material ,costs and weight than bi-directional CF sheets made tubes
- (3) The Rockwell hardness was done which demonstrates the mean hardness number of Hybrid I was more prominent than Hybrid II in each position. Plainly higher the number means harder the material.
- (4) The vitality ingestion of Hybrid II is less than Hybrid I because the failure of CF and glass fiber changes from I method to II method while association with Al tube, formed large fragments, thus reduces its capacity to bear the load. So Hybrid II is ideally not considered as configuration.
- (5) As the energy absorption of Hybrid I increase by approx.37.7% than of Hybrid II and approx. 47.31% then single Al-out tube. It saves total cost of 32% then single CFRP tube .So Hybrid I is best compositions.

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