

**Title**

DAMAGE TOLERANCE OF COMPOSITE T-SECTIONS MADE OF COST-EFFECTIVE CARBON FIBRE PREFORM

**Abstract text**

T-sections of carbon fibre-reinforced composites are prone to delamination due to lack of through thickness reinforcement. This paper presents an experimental study of the structural response of cost-effective laminate T-sections subjected to various types of load cases and impact damage. The analysed section is the core of the automated manufactured beams. Pull-off, flange tension, and flange bending were applied on specimens extracted from an I-beam. Failure process of all the specimens was investigated in detail leading to statistical evaluation of failure modes. Impact damage tolerance of the T-sections was studied in the experiments as the literature on this topic is limited. The results show a correlation between impact damage energy and certain fracture patterns. These results can be used for damage tolerance design for stiffeners, beams, and various complex structures.

**Keywords**

CARBON FIBRE-REINFORCED COMPOSITES, T-SECTION, DAMAGE TOLERANCE, IMPACT DAMAGE, AEROSPACE VEHICLES

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