

عنوان مقاله:

Experimental and Numerical Investigation of the Performance of Automotive Adhesively Bonded Crash Box Beams Under Transverse Loading

محل انتشار:

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خلاصه مقاله:

The aim of the study was to examine the deformation modes and also degradation of an adhesively bonded rectangular cross section beam used in the automotive body structure. The study included: (۱) performing new experimental investigations on the three-point bend behavior of a rectangular cross section beam made by adhesive bonding method. (۲) developing a finite element (FE) model to predict the mechanical load displacement behavior and also the degradation modes (i.e. delamination between the adhesive layer and beam wall). The agreement between experimental and FE results demonstrates that the investigated structural element's numerical model was created utilizing accurate assumptions. Finally, the effects of beam wall thickness and overlap length have been investigated in a parametric study using the validated FE model. It was shown that increasing the beam wall thickness resulted in delamination between the adhesive layer and beam wall.

کلمات کلیدی:

Thin-walled beam Adhesive joint Energy absorption Cohesive zone model (CZM) Automotive bumper beam

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