

Study of Crashworthiness Behavior of Thin-Walled Tube under Axial Loading by Using Computational Mechanics

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Abstract : This paper presents the computationally mechanics analysis of energy absorption for cylindrical and square thin wall tubed structure by using ABAQUS/explicit. The crashworthiness behavior of AISI 1020 mild steel thin-walled tube under axial loading has been studied. The influence effects of different model's cross-section, as well as model length on the crashworthiness behavior of thin-walled tube, are investigated. The model was placed on loading platform under axial loading with impact velocity of 5 m/s to obtain the deformation results of each model under quasi-static loading. The results showed that model undergoes different deformation mode exhibits different energy absorption performance.

Keywords : axial loading, computational mechanics, energy absorption performance, crashworthiness behavior, deformation mode

Conference Title : ICAMME 2016 : International Conference on Applied Mechanics and Materials Engineering

Conference Location : London, United Kingdom

Conference Dates : August 25-26, 2016