

Crushing Behaviour of Thin Tubes with Various Corrugated Sections Using Finite Element Modelling

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Abstract : Common steel tubes with similar confines were used in simulation of tubes with distinctive type of corrugated sections. These corrugated cross-sections were arc-tangent, triangular, trapezoidal and square corrugated sections. The outcome of fluctuating structures of tube cross-section shape on the deformation feedback, collapse form and energy absorption characteristics of tubes under quasi-static axial compression have been prepared numerically. The finite element package of ANSYS Workbench was applied in the current analysis. The axial load-displacement products accompanied by the fold formation of disparate tubes were inspected and compared. Deviation of the initial peak load and the mean crushing force of the tubes with distinctive cross-sections were conscientiously examined.

Keywords : absorbed energy, axial loading, corrugated tubes, finite element, initial peak load, mean crushing force

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