

Study on Energy Absorption Characteristic of Cab Frame with FEM

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Abstract : Cab's frame strength is considered as an important factor in excavator's operator safety, especially during roll-over. In this study, we use a model of cab frame with different thicknesses and perform elastoplastic numerical analysis by using Finite Element Method (FEM). Deformation mode and energy absorption's of cab's frame part are investigated on two conditions, with wrinkle and without wrinkle. The occurrence of wrinkle when deforming cab frame can reduce energy absorption, and among 4 parts with wrinkle, the energy absorption significantly decreases in part C. Residual stress that generated upon the bending process of part C is analyzed to confirm it possibility in increasing the energy absorption.

Keywords : ROPS, FEM, hydraulic excavator, cab frame

Conference Title : ICAME 2016 : International Conference on Automotive and Mechanical Engineering

Conference Location : London, United Kingdom

Conference Dates : March 17-18, 2016