عنوان مقاله:

Chip Formation Process using Finite Element Simulation Influence of Cutting Speed Variation

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خلاصه مقاله:

The main aim of this paper is to study the material removal phenomenon using the finite element method (FEM) analysis for orthogonal cutting, and the impact of cutting speed variation on the chip formation, stress and plastic deformation. We have explored different constitutive models describing the tool-workpiece interaction. The Johnson-Cook constitutive model with damage initiation and damage evolution has been used to simulate chip formation. Chip morphology, Stress and equivalent plastic deformation has been presented in this paper as results of chip formation process simulation using Abaqus explicit Software. According to simulation results, the variation of cutting speeds is an influential factor in chip formation, therefore with the increasing of cutting speed the chip type tends to become more segmented. Additionally to the chip formation and morphology obtained from the finite element simulation results, some other mechanical parameters; which are very difficult to measure on the experimental test, can be .obtained through finite element modeling of chip formation process

کلمات کلیدی:

FEM simulation, Johnson Cook model, Abaqus explicit, Chip formation, Cutting process