

عنوان مقاله:

A COMPARATIVE STUDY TO EVALUATE THE EFFICIENCY OF RCS AND CGP PROCESSES

محل انتشار:

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خلاصه مقاله:

In this research, modern manufacturing processes of constrained groove pressing (CGP) and Repetitive corrugation and straightening (RSC) as two effective severe plastic deformation (SPD) methods was applied on the specimens of low carbon steel sheets, in order to improve mechanical properties such as tensile strength and micro hardness. According to few differences between CGP and RCS a comparative study was carried out in order to investigate inhomogeneity factor, force diagram, and amount of induced strain via these two strengthening processes. The finite element simulations were carried out under 2D condition, using Abaqus software for both RCS and CGP processes. The CGP finite element simulation was first validated by the experimental results. It is concluded from this study that although less force is needed for RCS process, but CGP process is considered as a more effective SPD process due to less material wastage. In addition, the shear strains are induced on the sheet more uniformly in CGP process .comparing to RCS process and thus it leads a better and more uniform mechanical properties

کلمات کلیدی:

CGP, FE analysis, low carbon steel, RCS, SPD :

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