

Study the Effect of Tolerances for Press Tool Assembly: Computer Aided Tolerance Analysis

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Abstract : This paper describes a study for simple blanking tool. In blanking or piercing operation, punch and die should be concentric for proper cutting. In this study, tolerance analysis method is used to analyze the variation in the press tool assembly. Variation results into the eccentricity in between die and punch due to cumulative tolerance of parts used in assembly. 1D variation analysis were performed by CREO parametric computer aided design (CAD) Software Powered by CETOL 6 σ computer aided tolerance analysis software. Use of CAD analysis software given the opportunity to find out the cause of variation in tool assembly. Accordingly, the new specification of tolerance and process setting for die set manufacturing has determined. Tolerance allocation and tolerance analysis method were performed iteratively to conclude that position tolerance as well as size tolerance of hole in top plate for bush and size tolerance of guide pillar were more responsible for eccentricity in punch and die. This work proposes optimum tolerance for press tool assembly parts to achieve 100 % yield for specified .015mm minimum tolerance zone.

Keywords : blanking, GD&T (Geometric Dimension and Tolerancing), DPMU (defects per million unit), press tool, stackup analysis, tolerance allocation, yield percentage

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