

Bending Analysis of Steel Plates on 3D Roller Bending Machine

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Abstract: Sheet metal bending processes are some of the most commonly used industrial manufacturing operations. The development and optimization of these processes are time consuming and costly. Therefore, finite element simulations may aid the design and quality assurance of sheet metal products. In the present study, a commercial finite element package was used to analyze the three-roller bending of a steel sheet. Now, the problem is we cannot predict Maximum displacement of top roller without endangering crack formation in plate so that we need to investigate effect of top roller position on maximum stress and residual stresses in the formed sheet and also find Maximum displacement of top roller allowed without endangering crack formation in plate. Here our objective is to design three roll pyramidal bending machine for given sheet thickness range. To Conduct Dynamic FEA analysis using ANSYS to validate maximum stress –strain produced in the sheet by given top roller position. Find Maximum displacement of top roller allowed without endangering crack formation in work piece.

Keywords: 3D Roller, Bending Analysis, Shaft Design, Bending Machine