

عنوان مقاله:

Ovality and Bow Defect of Pre-punched Sheets in Roll Forming of Trapezoidal Sections

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خلاصه مقاله:

Roll forming process is used for manufacturing sheet metal parts by successive bending and creating the final shape with gradual deformation. In this article, deformation of a pre-punched sheet due to the roll forming process was studied. Two main defects in the roll forming process are ovality of holes and bow defect. The ovality of the hole is influenced by the process parameters including sheet strength, thickness, initial hole diameter and distance of hole center to lateral edge. Due to the roll forming process, the sheet undesirably bent along longitudinal direction to a slight curved part which called bow defect. Also, the magnitude of product's curvature along longitudinal direction (bow defect) was measured. The experimental tests were conducted on ASTM 230, 275 and 340 galvanized steels. The results showed that increase in the yield strength elongates the hole along rolling direction and shortened the hole perpendicular to rolling dimension. Therefore, the ovality of hole increases by increasing the yield strength. Also, similar trends were observed by increasing the thickness and the distance between hole center and lateral edge. The results showed that the bow defect decreases by increasing the material yield strength, while with increase in the sheet thickness, initial hole diameter and hole distance from lateral edge the bow defect was increased.

کلمات کلیدی:

Roll Forming, Hole Deformation, Process Parameters, Ovality, Bow Defect

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