EXPERIMENTAL LOAD PREDICTION FOR THE EXTRUSION FROM CIRCULAR BILLET TO SOME COMPLEX DIE PROFILES

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ABSTRACT
Extrusion process has definite advantage over other bulk metal forming operations such as rolling, forging and drawing because of the possibility of producing different shapes. With the increasing demand for sections of different shapes, it has become essential to experimentally determine the deformation load that results with increasing complexity of die opening geometry. The main objective of the present investigation is to experimentally determine deformation loads for the extrusion of some complex geometries such as hexagon, triangle, H-, T-, and L-section from circular billets through a linear converging dies at a constant area reduction of 60% using palm oil as lubricant. Three billet heights of 20, 25.4 and 38.1 mm were used. The experiment was performed three times and the average deformation load recorded. The experimental read-out shows that the deformation load for L-section gives the highest, followed by T-section, triangular section, H-section while that of hexagonal gives the least. With the same area reduction and under the same extrusion conditions, the result must have been influenced by the complexity or otherwise of the metal flow through the deformation zone.