8th International Conference on Physical and Numerical Simulation of Materials Processing (ICPNS)

14–17 October 2016

Seattle, Washington | Hosted by Purdue University

SESSION 6: LIGHT ALLOYS, MARITIME HALL

Co-Chairs: Jong Ning Aoh, National Chung Cheng University; Zuyan Liu, Harbin Institute of Technology

SUNDAY, OCTOBER 16, 2016

Steady-state simulation and die improvement on the extrusion of magnesium square tube with thin wall

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ABSTRACT

In this paper, steady-state simulation of the extrusion process of thin-wall magnesium profile was carried. The velocity field, strain field, and temperature field were analyzed. The results show that the non-uniform metal flow at the die exit is caused by the die un-proper structure. Then, at the strengthen rib of the die, the exit was expanded, so that the velocity was increased and the whole velocity distribution is more uniform. The problem of the non-uniform distribution of the metal flow was solved effectively. The results of simulation for the improved die are in accordance with the practical production requirements.

KEYWORDS: magnesium square-tube with thin wall, die, ALE steady-state simulation