Advances on Hot Extrusion and Simulation of Light Alloys

Edited by
A. Erman Tekkaya and Nooman Ben Khalifa

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Selected, peer reviewed papers from the International Conference

on Extrusion and Benchmark (ICEB),

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Preface

This special issue of the journal “Key Engineering Materials” contains peer reviewed papers presented at the International Conference on Extrusion and Benchmark (ICEB). They give an insight into the latest advances in extrusion technology and its simulation. The papers cover a wide range of topics and are grouped into the categories of: benchmark, microstructure, seam welds & composite extrusion, material flow & constitutive equations, dies & tools, and process control & optimization. However, many more topics such as new materials (magnesium and composites) and new profiles (composite profiles), have been covered.

In particular the benchmark part at the conference aimed at exploiting FEM code capabilities and users´ knowledge in the simulation of an industrial extrusion process as it was experimentally realized by the conference organizers. In the 2009 edition of the benchmark, a two-hole die has been used for producing two U-shape profiles with different supporting legs. The experiments have been strictly monitored. The influence of die deformation on the extrusion speed, temperature distribution and distortion of the two profiles is reported and analyzed. Due to the complexity of this matter, the benchmark should not be considered as a contest: Instead, it should be recognized as an opportunity to detect, explore and discuss various issues about common simulation practice, with each participant having his/her own particular interest. We hope that these results will serve for the improvement of the existing simulation skills and also help to develop the future benchmark experiments.

Finally, we would like to express our gratitude to the reviewers of the submitted papers, principally to our co-organizers Professor Luca Tomesani and Dr. Lorenzo Donati of University of Bologna, for their hard work and critical but constructive remarks, which helped the conference to maintain a high scientific level. We hope that the proceedings will become a source of valuable information useful in scientific work for researchers, engineers and students and we were pleased to welcome everyone to Dortmund to the international Extrusion Conference and Benchmark.

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Table of Contents