

Table of Contents

Preface, Scientific Committee

Chapter 1: Light Metals and Light Alloys, Properties and Processing Technologies

Mechanical Properties and Microstructure of the Magnesium Alloy Mg-6.8Y-2.5Zn-0.5Al Produced by Casting and Hot Rolling K. Neh, M. Ullmann and R. Kawalla	3
Application and Research Twin Roll Casting-Extruding Process for Production Longish Deformed Semi-Finished Products from Aluminum Alloys S. Sidelnikov, R. Galiev, A. Bersenev and D. Voroshilov	13
Preparation of Novel Al-Er Master Alloys in Chloride-Fluoride Melt Y.I. Kosov and V.Y. Bazhin	21
Closed Die Forging of Mg-Al-Zn-Ca-Y Alloys N. Papenberg and S. Gneiger	28
Development of an Innovative and Quality-Focused Production Technology for Magnesium Wire M. Moses, C. Kawalla, R. Kawalla and M. Höck	34
Determination of the Hot Cracking Tendency of a Twin-Roll Cast AZ31 Magnesium Alloy by Means of Gleeble Tests H. Wemme, C. Krbetschek, M. Ullmann, A. Freigang, S. Plach and R. Kawalla	40
Asymmetric Twin-Roll Casting of an Al-Mg-Si-Alloy O. Grydin, M. Stolbchenko, M. Bauer and M. Schaper	48
Physical Modeling Technological Regimes of Production Deformed Semi-Finished Products from Experimental Aluminium Alloys Alloyed by Scandium V. Baranov, S. Sidelnikov, E. Zenkin and O. Yakiviyuk	54

Chapter 2: Latest Trends in Forging Technology

Experimental Evaluation of Cold Forging Lubricants Using Double-Cup-Extrusion-Tests R. Lorenz, H. Hagenah and M. Merklein	65
Manufacturing of Long-Length Rods of Ultrafine-Grained Ti-Ni Shape Memory Alloys S. Prokoshkin, I. Khmelevskaya, V. Andreev, R. Karelin, V. Komarov and A. Kazakbiev	71
Closing of Shrinkage Cavities by Means of Open-Die Forging J. Hauri, M. Graf, B. Awiszus and R. Kawalla	77
Development of a Quenching-Partitioning Process Chain for Forging Components M. Graf, S. Härtel, A. Bauer, W. Förster, D. Bublikova, M.F.X. Wagner, B. Awiszus and B. Masek	85

Chapter 3: Numerical Simulation of Technological Processes

Robustness - Practice Report: Make Forming Processes more Stable K. Kittner and B. Stimpert	95
Novel Approach for the Determination of the Taylor-Quinney Coefficient S. Härtel, M. Graf, B. Awiszus, K.G. Abstoss and R. Hild	103
Modelling of Cooling and Recrystallization Kinetics during Self-Annealing of Aluminium Coils A. Nam, V.V. Yashin, E. Aryshenskii, A.V. Zinoviev and R. Kawalla	110
Experimental Investigations of Bulge Formation for Burnishing on Plain Surfaces M. Putz, M. Dix and R. Stöckmann	117

Chapter 4: Current Trends in the Processing the Steel and Non-Ferrous Metals

Investigating the Influence of Bending Parameters on the Springback Behavior of Ultra-High Strength Spring Strips K. Richter, F. Reuther, R. Müller and D. Landgrebe	125
Automation Tool for Quality Assurance of Long Products M. Liskow and M. Kruse	134
Improvement of Manufacturing Technology for Thin-Walled Pipes Made of Copper Alloys A. Bogatov, D.R. Salikhyanov and A.S. Ovchinnikov	140
Evolution of the Microstructure of the Copper Alloy (DIN-ECu-57) in the Deformation Zone in the Process of Pressing Conform A.V. Zinoviev, A.N. Koshmin and A.Y. Chasnikov	145
Effect of Cooling and Isothermal Holding on the Amount of Martensite/Austenite (M/A) Constituents, Microstructure and Mechanical Properties of Microalloyed Pipeline Steel A. Kabanov, G. Korpala, R. Kawalla and S. Ionov	152
Optimization of Tooling Design for Hot Mandrel Bending of Pipe Elbows U. Diekmann, W. Homberg, J. Prehm, T. Rostek, N. Schönhoff, D. Tabakajew, A. Trasca and H. Uysal	159