

## Contents

<b>Preface.....</b>	V
<b>Vorwort.....</b>	VI
<b>Organization .....</b>	VII
<b>Contents .....</b>	VIII
<b>I. Forming Machine Tools and Manufacturing Processes .....</b>	13
Overcoming Limits - Die Forging of Cast Preforms .....	15
Manufacturing of optical surfaces by burnishing of PMX170CrVMo18-3-1 ....	25
Influence of shot peening materials on the topography, surface integrity and friction of hot forging tools .....	33
Investigation of dry lubrication systems for lightweight materials in hot forming processes .....	43
Process Development for the Remanufacturing of Geared Components .....	53
Material characterisation as a basis for material modelling for heat treatment during roll forming .....	63
Investigations of forming force, friction values and surface qualities in ring compression tests using oscillating tools.....	73
Investigations on Residual Stress Generation in Extruded Steel Components...	83
Development of a Design Tool for Servo-Powertrains in Forming Presses.....	93
Characterization of temperature-dependent tension-compression asymmetry for high-strength aluminium alloys.....	103
Enhanced accuracy in springback prediction for multistage sheet metal forming processes .....	111
Autoadaptive Minimization of Transfer System Oscillations .....	121
Rotational Molding for the Production of Hybrid FRP Metal Tension and Compression Rods with Form Fit .....	131
Characterisation of Self-Regenerative Dry Lubricated Layers on Mo-Basis by Nano Mechanical Testing.....	139
Validation of numerical simulations for the reduced freeform bending process using a test bench .....	149
Investigation of the forming limit behavior of martensitic chromium steels for hot sheet metal forming.....	159
Experimental Investigation of Inserts in SMC Foam Sandwich Structures for Aircraft Interior Applications.....	169
Electromagnetic Forming of Design Elements.....	179

Influence of Increased Manganese Content on the Precipitation Behaviour of AISI H10 in Thermomechanical Fatigue Tests.....	189
Manufacturing of Hybrid Solid Components by Tailored Forming .....	199
Thermal characterization of metallic surface contacts: New test rig for determination of the interfacial heat transfer coefficient at intermediate temperatures .....	209
Towards Nonstop Availability in Roll Forming through Digitalization.....	219
Forging of Extremely Finely Grained Microstructure Materials by Use of Thermomechanically Treated Base Material.....	229
Extremely smooth: how smooth surfaces enable dry and boundary lubricated forming of aluminum .....	239
<b>II. Cutting Machine Tools and Manufacturing Methods .....</b>	<b>248</b>
Shape alterations and their holistic geometrical representation in abrasive flow machining.....	249
Micro milling of areal material measures: Influence of the manufacturing parameters on the surface quality .....	259
Additive manufacturing for intelligent lightweight tools .....	269
Drive Unit Enabling Electrochemical Orbiting with High Dynamics and High Accuracy .....	277
Concept to analyze residual stresses in milled thin walled monolithic aluminum components and their effect on part distortion .....	287
Experimental Analysis of the Friction Behaviour in Cutting .....	297
Mutability of cutting materials – performance of niobium carbide based hard metals .....	307
Recognition of wood and wood-based materials during machining using acoustic emission .....	317
Pre- and post-treatment of HVOF-WC-CoCr-coated HSS cutting parts in order to substitute sintered cemented carbide cutting tool materials .....	327
Orthogonal Turning Simulations for Casted Steel Alloy Using Mesh Free Methods.....	337
Safety of slim tool extensions for milling operations at the limit.....	347
<b>III. Automated Assembly and Robotics.....</b>	<b>358</b>
Influence of filler wire oscillation on the seam texture in laser beam brazing .	359
Hightspeed Force Sensitive Object Handling via Cyberphysical Gripping System.....	369

Overview and Classification of Defects occurring during Laser Beam Melting of Nickel-base Alloys .....	379
Fast Pick and Place Stacking System for Thin, Limp and Inhomogeneous Fuel Cell Components .....	389
Higher deposition rates in laser hot wire cladding (LHWC) by beam oscillation and thermal control .....	401
Challenges in bonding processes in the production of electric motors.....	411
Synchronization of Scrum and Stage-Gate in Hybrid Product Development Projects of Manufacturing Companies .....	421
Robot-based automated production of wrapped connections with single solid round wires.....	431
Towards a Framework for Evaluating Exoskeletons.....	441
Robot-Based Hybrid Production Concept .....	451
<b>IV. Machine Learning.....</b>	<b>462</b>
Control loop for a databased prediction of order-specific transition times .....	463
Data-driven Prediction of Surface Quality in Fused Deposition Modeling using Machine Learning .....	473
Experimental validation of smoothed machine learning-based parameterization of local support in robot-based incremental sheet forming.....	483
Machine Learning and Artificial Intelligence in Production: Application Areas and Publicly Available Data Sets .....	493
Camera Based Ball Screw Spindle Defect Classification System .....	503
Cross-Process Quality Analysis of X-ray Tubes for Medical Applications Using Machine Learning Techniques .....	513
Development of a Machine Learning Model for a Multi-Correlative Sample-Based Prediction of Product Quality for Complex Machining Processes .....	523
Internet of Production: Rethinking production management .....	533
Auto-configuration of a digital twin for machine tools by intelligent crawling	543
Certifications of AI-Supported Production Processes .....	553
<b>V. Industrial Science .....</b>	<b>562</b>
Influencing factors for the design of agile global production networks .....	563
Systematical Combination of a Lean Production System and Industry 4.0	
Development of a method library to assess interactions .....	573
Concept for the industrialization of physical products in the highly iterative product development .....	583

Data Acquisition System in Value Streams for Resource Consumption Monitoring and Workpiece Traceability .....	593
Framework for Smart Services as a premise for collaboration in the era of manufacturing services.....	603
Methodology for the risk and reward evaluation of industrial subscription models .....	613
Analysis of mobility-oriented maintenance services for complex technical systems - An empirical preliminary study .....	623
Integrated Process for Optimized Planning of Migration in Production Networks .....	633
Automatic Generation of Model Sets for Simulation-based Validation of New Production Planning and Control Methods .....	643
Concept for Organizational Structures of Agile Development Networks .....	653