



## Manufacturing Processes 4: Forming (RWTHedition)

By Fritz Klocke

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This book provides essential information on metal forming, utilizing a practical distinction between bulk and sheet metal forming. In the field of bulk forming, it examines processes of cold, warm and hot bulk forming, as well as rolling and a new addition, the process of thixoforming. As for the field of sheet metal working, on the one hand it deals with sheet metal forming processes (deep drawing, flange forming, stretch drawing, metal spinning and bending). In terms of special processes, the chapters on internal high-pressure forming and high rate forming have been revised and refined. On the other, the book elucidates and presents the state of the art in sheet metal separation processes (shearing and fineblanking). Furthermore, joining by forming has been added to the new edition as a new chapter describing mechanical methods for joining sheet metals. The new chapter “Basic Principles” addresses both sheet metal and bulk forming, in addition to metal physics, plastomechanics and computational basics; these points are complemented by the newly added topics of metallography and analysis, materials and processes for testing, and tribology and lubrication techniques. The chapters are supplemented by an in-depth description of modern numeric methods such as the finite element method. All chapters have been updated and revised for the new edition, and many practical examples from modern manufacturing processes have been added.

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From the Back Cover

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Fritz Klocke, born on October 10th, 1950 in Vlotho, Germany. 1968 apprenticeship examination as a toolmaker. 1970-1973 production engineering studies at Lemgo/Lippe Polytechnic. 1973-1976 production engineering studies at Technical University Berlin. 1977-1981 research assistant, 1981-1984 chief engineer at the Institute for Machine Tools and Production Engineering, Technical University Berlin. 1982 doctorate in engineering. 1984-1994 employed at Ernst Winter & Sohn GmbH & Co., Hamburg. January 1st, 1995 director of the Department of Manufacturing Technology at the RWTH Aachen’s Laboratory for Machine Tools and Production Engineering (WZL) and director of the Fraunhofer Institute of Production Technology (FhG-IPT), Aachen.

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