Applied metal forming: including fem analysis

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Abstrak

Applied Metal Forming: Including FEM Analysis describes metal forming theory and how experimental techniques can be used to study metal forming operations with great accuracy. For each primary class of processes, such as forging, rolling, extrusion, wiredrawing, and sheet-metal forming, it explains how finite element analysis (FEA) can be applied with great precision to characterize the forming conditions and in this way optimize the processes. FEA has made it possible to build realistic FEM models of most metal forming processes, including complex three dimensional forming operations, in which complex products are shaped by complex dies. Thus, using FEA, it is now possible to visualize any metal forming process and to study strain, stress, and other forming conditions inside the parts being manufactured as they develop throughout the process. Henry S. Valberg is a professor in the Department of Engineering Science and Materials at the Norwegian University of Science and Technology(NTNU). He began his professional career as a metallurgist at the Royal Norwegian Air Force (LFK), and continued it at A/S Norsk
Jernverk, Mo i Rana, and then as a research scientist at SINTEF, Division of Materials and Processes, before joining the Norwegian Institute of Technology (NTH) as a senior lecturer in 1984 and full professor in 1994. He was a visiting professor at Denmark’s Technical University
in 1997–1998. Professor Valberg’s main fields of research are materials, metal forming, experimental deformation analysis, and FEA. His work covers all the main metal forming processes, including forging, rolling, extrusion, drawing, and sheet-metal forming. He is the author
of more than 60 refereed journal articles and has supervised numerous graduate students. Professor Valberg is currently a research manager in a project run by three Norwegian forging companies.