



ADVANCED MACHINING PROCESSES OF METALLIC MATERIALS

Theory, Modelling and Applications

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Description

This book brings updated knowledge on the metal cutting processes in relation to theory and industrial practice. In particular, many topics reflect recent developments, as for instance modern tool materials, computational machining, computer simulation of various process phenomena, chip control, monitoring of the cutting state, progressive and hybrid machining operations, and generation and modelling of surface integrity. This book addresses present state and future development of machining technologies. It provides a comprehensive description of metal cutting theory, experimental and modelling techniques along with basic machining processes and their effective use in a wide range of manufacturing applications. Topics covered in the book include details of fundamental physical phenomena and possible methods for their evaluation, available technology of machining processes for specific classes of materials and surface integrity. The book also aims to provide strategies for optimization techniques and assessment of machinability. Moreover, it describes topics not currently covered in other sources, such as high performance and multitasking (complete) machining with a high potential for increasing productivity, and virtual and e-machining. The book is also based on the author and his research team's long-lasting experimental work on the machining process, especially with cutting tool coatings technology. During twenty years the author has been tracking the most valuable technical information from technical universities and industrial research centres, and collecting hundreds published books and papers in this and other closely related fields of science. Extensive information collected is compressed in the single volume to provide the knowledge on the state-of-the-art of machining and its role in creating more competitive market. The research work conducted in this book has contributed to a more generalized vision of machining technology, including not only traditional manufacturing tasks but also new potential (emerging) applications such as micro- and nanotechnology. The main reason for the author to write this book is to provide a comprehensive knowledge on, and a systematic approach to metal cutting, a complex however rapidly developing branch of manufacturing technology.

Audience

This book is suitable for upper-level undergraduate, graduate, PhD students and researchers in metal cutting area who are working in manufacturing, mechanical and industrial engineering sectors. It is can also be addressed to experienced engineers in these disciplines as a self-study guide.

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