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GRINDING TECHNOLOGY

Theory and Applications
of Machining with Abrasives

SECOND EDITION

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Preface

The first edition of this book was intended to provide an integrated scientific foundation for understanding of the grinding process, which can be practically utilized for enhancing and optimizing grinding operations. After 18 years in print, the first edition is still selling and is widely referenced, but many of the newer developments in grinding led us to think that the time had come for a new edition. This second edition builds upon the first edition with greatly expanded coverage of the thermal aspects of grinding, creep-feed grinding, grinding with superabrasives, fluid flow, process simulation, optimization, and intelligent control of grinding machines.

This book is written both for the researcher and the practicing engineer. As with the first edition, it is expected that the second edition will be used as a textbook or supplement for advanced courses on machining and grinding, for industrial short courses, and as a source of fundamental and practical information about the grinding process and its utilization.

Preparation of the second edition of this book was undertaken by the authors as part of their collaborative relationship which began at the University of Massachusetts in 1989. During this time, we have had the good fortune to work with many outstanding graduate students and to benefit from interactions with and support from many colleagues and friends in academia and industry who are too numerous to mention individually.

...

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Biographical Sketches for Authors

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Stephen Malkin is Distinguished Professor and former head of the Department of Mechanical & Industrial Engineering at the University of Massachusetts. He graduated from MIT with BS (1963), MS (1965), and ScD (1968) degrees in mechanical engineering. Prior to joining the University of Massachusetts in 1986, he held faculty positions at the University of Texas, State University of New York, and Technion-Israel Institute of Technology. An author of more than 200 papers, he is internationally recognized for research on grinding and abrasive processes. As an industrial consultant and lecturer, he has been a leader in the practical utilization of grinding technology for enhancing productivity and quality. Dr. Malkin is a member of the National Academy of Engineering (NAE), and a fellow of the International Institution for Production Engineering Research (CIRP), the American Society of Mechanical Engineers (ASME), and Society of Manufacturing Engineers (SME). He received the ASME Blackall Award of 1993 for best papers related to machine tools, the SME Gold Medal of 1996 for his outstanding research accomplishments and contributions to the manufacturing profession, the University of Massachusetts Outstanding Engineering Faculty Award of 1997, and the ASME William T. Ennor Manufacturing Technology Award of 2004 in recognition of his leading role in the transformation of grinding and abrasive machining from an empirical craft to an applied science.

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