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Nota di contenuto	Cover; Table of Contents; Foreword; Preface; Acknowledgements; Chapter 1. Introduction: Historical and Economic Context; The Metal Cutting (or Machining) Process; A Short History of Machining; Machining and the Global Economy; Summary and Conclusion; References; Chapter 2. Metal Cutting Operations and Terminology; Introduction; Turning; Boring Operations; Drilling; Facing; Forming and Parting Off; Milling; Shaping and Planing; Broaching; Conclusion; References; Bibliography (Also see Chapter 15); Chapter 3. The Essential Features of Metal Cutting; Introduction; The Chip Techniques for Study of Chip Formation Chip Shape; Chip Formation; The Chip/tool Interface; Chip Flow Under Conditions of Seizure; The Built-up Edge; Machined Surfaces; Summary and Conclusion; References; Chapter 4. Forces and Stresses in Metal Cutting; Introduction; Stress on the Shear Plane; Forces in the Flow Zone; The Shear Plane and Minimum Energy Theory; Forces in Cutting Metals and Alloys; Stresses in the Tool; Stress Distribution; Conclusion; References; Chapter 5. Heat in Metal Cutting; Introduction; Heat In the Primary Shear Zone; Heat at the Tool/work Interface Heat Flow at the Tool Clearance Face Heat in Areas of Sliding; Methods of Tool Temperature Measurement; Measured Temperature Distribution in Tools; Relationship of Tool Temperature to Speed; Relationship of

Tool Temperature to Tool Design; Conclusion; References; Chapter 6. Cutting Tool Materials I: High Speed Steels; Introduction and Short History; Carbon Steel Tools; High Speed Steels; Structure and Composition; Properties of High Speed Steels; Tool Life and Performance of High Speed Steel Tools; Tool-life Testing; Conditions of Use; Further Development; Conclusion; References
Chapter 7. Cutting Tool Materials II: Cemented Carbides Cemented Carbides: an Introduction; Structures and Properties; Tungsten Carbide-Cobalt Alloys (WC-Co); Tool Life and Performance of Tungsten Carbide-Cobalt Tools; Tungsten-Titanium-Tantalum Carbide Bonded with Cobalt; Performance of (WC+TiC+TaC) -Co Tools; Perspective: StraightZ WC-Co Grades versus the Steel-CuttingZ Grades; Performance of TiC OnlyZ Based Tools; Performance of Laminated and Coated Tools; Practical Techniques of Using Cemented Carbides for Cutting; Conclusion on Carbide Tools; References
Chapter 8. Cutting Tool Materials III: Ceramics, CBN Diamond Introduction; Alumina (Ceramic) Tools; Alumina-Based Composites (Al2O3 + TiC); Sialon; Cubic Boron Nitride (CBN); Diamond, Synthetic Diamond, and Diamond Coated Cutting Tools; General Survey of All Tool Materials; References; Chapter 9. Machinability; Introduction; Magnesium; Aluminum and Aluminum Alloys; Copper, Brass and Other Copper Alloys; Commercially Pure Iron; Steels: Alloy Steels and Heat-Treatments; Free-Cutting Steels; Austenitic Stainless Steels; Cast Iron; Nickel and Nickel Alloys; Titanium and Titanium Alloys; Zirconium Conclusions on Machinability

Sommario/riassunto

Metal cutting is an essential process throughout engineering design and manufacturing industries. To increase efficiency and reduce costs, it is necessary to improve understanding of the metal cutting process. This book presents a comprehensive treatment of the subject that focuses on the features of the behavior of tool and work materials that influence the efficiency of metal cutting operations.The fourth edition of this acclaimed book has been expanded and revised to include significant changes and additions to metal cutting theory, and to cover developments in tool materials