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Nota di contenuto	Front Cover; Mechanics of Sheet Metal Forming; Copyright Page; Contents; Preface to the second edition; Preface to the first edition; Disclaimer; Introduction; Chapter 1. Material properties; 1.1 Tensile test; 1.2 Effect of properties on forming; 1.3 Other mechanical tests; 1.4 Exercises; Chapter 2. Sheet deformation processes; 2.1 Introduction; 2.2 Uniaxial tension; 2.3 General sheet processes (plane stress); 2.4 Yielding in plane stress; 2.5 The flow rule; 2.6 Work of plastic deformation; 2.7 Work hardening hypothesis; 2.8 Effective stress and strain functions; 2.9 Summary; 2.10 Exercises Chapter 3. Deformation of sheet in plane stress3.1 Uniform sheet deformation processes; 3.2 Strain distributions; 3.3 Strain diagram; 3.4 Modes of deformation; 3.5 Effective stress-strain laws; 3.6 The stress diagram; 3.7 Principal tensions or tractions; 3.8 Summary; 3.9 Exercises; Chapter 4. Simplified stamping analysis; 4.1 Introduction; 4.2 Two-dimensional model of stamping; 4.3 Stretch and draw ratios in

a stamping; 4.4 Three-dimensional stamping model; 4.5 Exercises; Chapter 5. Load instability and tearing; 5.1 Introduction; 5.2 Uniaxial tension of a perfect strip
5.3 Tension of an imperfect strip5.4 Tensile instability in stretching continuous sheet; 5.5 Factors affecting the forming limit curve; 5.6 The forming window; 5.7 Exercises; Chapter 6. Bending of sheet; 6.1 Introduction; 6.2 Variables in bending a continuous sheet; 6.3 Equilibrium conditions; 6.4 Choice of material model; 6.5 Bending without tension; 6.6 Elastic unloading and springback; 6.7 Small radius bends; 6.8 The bending line; 6.9 Bending a sheet in a vee-die; 6.10 Exercises; Chapter 7. Simplified analysis of circular shells; 7.1 Introduction; 7.2 The shell element
7.3 Equilibrium equations7.4 Approximate models of forming axisymmetric shells; 7.5 Applications of the simple theory; 7.6 Summary; 7.7 Exercises; Chapter 8. Cylindrical deep drawing; 8.1 Introduction; 8.2 Drawing the flange; 8.3 Cup height; 8.4 Redrawing cylindrical cups; 8.5 Wall ironing of deep-drawn cups; 8.6 Exercises; Chapter 9. Stretching circular shells; 9.1 Bulging with fluid pressure; 9.2 Stretching over a hemispherical punch; 9.3 Effect of punch shape and friction; 9.4 Exercises; Chapter 10. Combined bending and tension of sheet; 10.1 Introduction
10.2 Stretching and bending an elastic, perfectly plastic sheet10.3 Bending and stretching a strain-hardening sheet; 10.4 Bending a rigid, perfectly plastic sheet under tension; 10.5 Bending and unbending under tension; 10.6 Draw-beads; 10.7 Exercises; Chapter 11. Hydroforming; 11.1 Introduction; 11.2 Free expansion of a cylinder by internal pressure; 11.3 Forming a cylinder to a square section; 11.4 Constant thickness forming; 11.5 Low-pressure or sequential hydroforming; 11.6 Summary; 11.7 Exercises; Appendix A1: Yielding in three-dimensional stress state
Appendix A2: Large strains: an alternative definition

Sommario/riassunto

The basic theory of sheet metal forming in the automotive, appliance and aircraft industries is given. This fills a gap between the descriptive treatments in most manufacturing texts and the advanced numerical methods used in computer-aided-design systems. The book may be used by lecturers in undergraduate courses in manufacturing; plentiful exercises and worked examples provide quantitative tutorial problems for students. A separate, but related simulation software package advertised on this page enables students to explore the limits of processes and understand the influence of dif
