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Nota di contenuto	Metallurgy and Mechanics of Welding; Table of Contents; Preface; Chapter 1. Traditional Welding Processes; 1.1. Introduction; 1.2. Conditions to create metallic bonding; 1.2.1. Activation of surfaces; 1.2.2. Elimination of obstacles to bond creation; 1.2.3. How can we classify the various welding processes?; 1.3. Industrial welding processes; 1.3.1. Processes using local fusion of components without mechanical action; 1.3.2. Processes using local fusion of components with mechanical action; 1.3.3. Processes using heating without fusion but with mechanical action 1.3.4. Processes using mechanical action without heating1.4. Bibliography; Chapter 2. High Density Energy Beam Welding Processes: Electron Beam and Laser Beam; 2.1. Welding properties using high density energy beams; 2.2. Laser beam welding; 2.2.1. History; 2.2.2. Principle; 2.2.3. Various laser types; 2.2.4. Laser systems; 2.2.5. Implementation of laser beam welding; 2.3. Electron beam welding; 2.3.1. History; 2.3.2. Principle; 2.3.3. Equipment; 2.3.4. Design and preparation of the parts; 2.4. Metallurgy of high density energy beam welding; 2.4.1. Steels; 2.4.2. Aluminum alloys

2.4.3. Nickel-based alloys; 2.4.4. Titanium-based alloys; 2.4.5. Zirconium-based alloys; 2.4.6. Copper-based alloys; 2.5. Mechanical properties of welded joints; 2.6. The quality of the assemblies; 2.6.1. Weld defects; 2.6.2. Weld inspection methods; 2.6.3. Standardization and qualification of the welding operating mode; 2.7. Economic aspects; 2.7.1. Cost of an electron beam machine; 2.7.2. Cost of a laser beam machine; 2.8. Safety; 2.9. Examples of industrial applications; 2.9.1. Electron beam welding; 2.9.2. Laser beam welding; 2.10. Development prospects; 2.11. Bibliography

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Sommario/riassunto

This book offers a comprehensive overview on the subject of welding. Written by a group of expert contributors, the book covers all welding methods, from traditional to high-energy plasmas and lasers. The reference presents joint welding, stainless steel welding, aluminum welding, welding in the nuclear industry, and all aspects of welding quality control.
