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Nota di contenuto	Introduction -- General Concepts -- Thermal Energy Storage -- Reversible Chemical Reactions -- Energy Storage in Organic Fuels -- Mechanical Energy Storage -- Electromagnetic Energy Storage -- Hydrogen Storage -- Introduction to Electrochemical Energy Storage -- Principles Determining the Voltages and Capacities of Electrochemical Cells -- Binary Electrodes Under Equilibrium or Near-Equilibrium Conditions -- Ternary Electrodes Under Equilibrium or Near-Equilibrium Conditions -- Potentials -- Insertion Reaction Electrodes -- Electrode Reactions That Deviate From Complete Equilibrium -- Primary, Non-Rechargeable Batteries -- Lead-Acid Batteries -- Negative Electrodes in Other Rechargeable Aqueous Systems -- Positive Electrodes in Other Aqueous Systems -- Positive Electrodes in Lithium Systems -- Energy Storage for Medium-to-Large Scale Applications -- Storage of Energy for Vehicle Propulsion -- A Look to the Future.
Sommario/riassunto	Explains the fundamentals of all major energy storage methods, from thermal and mechanical to electrochemical and magnetic Clarifies which methods are optimal for important current applications, including electric vehicles, off-grid power supply, and demand response for variable energy resources such as wind and solar New and updated material focuses on cutting-edge advances including liquid batteries, sodium/sulfur cells, emerging electrochemical materials,

natural gas applications and hybrid system strategies This book explains the underlying scientific and engineering fundamentals of all major energy storage methods. These include the storage of energy as heat, in phase transitions and reversible chemical reactions, and in organic fuels and hydrogen, as well as in mechanical, electrostatic and magnetic systems. Updated coverage of electrochemical storage systems considers exciting developments in materials and methods for applications such as rapid short-term storage in hybrid and intermittent energy generation systems, and battery optimization for increasingly prevalent EV and stop-start automotive technologies. This nuanced coverage of cutting-edge advances is unique in that it does not require prior knowledge of electrochemistry. Traditional and emerging battery systems are explained, including lithium, flow and liquid batteries. Energy Storage provides a comprehensive overview of the concepts, principles and practice of energy storage that is useful to both students and professionals.