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Sommario/riassunto	This book is a collection of papers covering various aspects of the optimal control of power and energy production from renewable resources (wind, PV, biomass, hydrogen, etc.). In particular, attention is focused both on the optimal control of new technologies and on their integration in buildings, microgrids, and energy markets. The examples presented in this book are among the most promising technologies for satisfying an increasing share of thermal and electrical demands with renewable sources: from solar cooling plants to offshore wind generation; hybrid plants, combining traditional and renewable sources, are also considered, as well as traditional and innovative storage systems. Innovative solutions for transportation systems are also explored for both railway infrastructures and advanced light rail vehicles. The optimization and control of new solutions for the power network are addressed in detail: specifically, special attention is paid to microgrids as new paradigms for distribution networks, but also in other applications (e.g., shipboards). Finally, optimization and simulation models within SCADA and energy management systems are considered. This book is intended for engineers, researchers, and practitioners that work in the field of energy, smart grid, renewable resources, and their optimization and control.