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Titolo	The On-line Electric Vehicle : Wireless Electric Ground Transportation Systems // edited by Nam P. Suh, Dong Ho Cho
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Descrizione fisica	1 online resource (XXI, 402 p. 177 illus., 63 illus. in color.)
Disciplina	629.04
Soggetti	Transportation engineering Traffic engineering Transportation Management Industrial management Engineering design Transportation Technology and Traffic Engineering Innovation/Technology Management Engineering Design
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Part I: Synergy of Diverse Ideas behind OLEV: Making the Move: From Internal Combustion Engines to Wireless Electric Vehicles -- Wireless Power Transfer for Electric Vehicles -- Design of Large Engineered Systems -- Part II: The Technology of OLEV and SMFIR -- Axiomatic Design in the Design of OLEV -- Overview of Wireless Power Transfer System for a Bus -- Magnetic Field Generation -- Magnetic Energy Pick-Up Using Resonance -- Selection of the Optimum Frequency and Optimization -- Optimum Design of Wireless Power Transfer System -- Inverter- and Road-Embedded Power Cable Module. Installing of Road-Embedded Power Cables -- Pickup and Rectifier -- Regulator -- Shielding of Magnetic Field -- High Power and Energy Management System in OLEVs -- System Architecture and the Allocation of Wireless Charging Power Supply Systems for the On-line Electric Vehicle System -- Part III: Other Applications for OLEV Technology -- Application of

SMFIR -- Electrification of other Transportation Systems -- Other Applications of Wireless Power Transfer Systems -- Part IV: Performance, Cost, Regulatory and Safety Considerations -- Electrified Transportation System Performance: Conventional vs. On-line Electric Vehicles -- Energy-Efficiency of an OLEV System -- The Economics of Wireless Charging on the Road -- Regulatory and Safety Issues.

Sommario/riassunto

This book details the design and technology of the on-line electric vehicle (OLEV) system and its enabling wireless power-transfer technology, the “shaped magnetic field in resonance” (SMFIR). The text shows how OLEV systems can achieve their three linked important goals: reduction of CO₂ produced by ground transportation; improved energy efficiency of ground transportation; and contribution to the amelioration or prevention of climate change and global warming. SMFIR provides power to the OLEV by wireless transmission from underground cables using an alternating magnetic field and the reader learns how this is done. This cable network will in future be part of any local smart grid for energy supply and use thereby exploiting local and renewable energy generation to further its aims. In addition to the technical details involved with design and realization of a fleet of vehicles combined with extensive subsurface charging infrastructure, practical issues such as those involved with pedestrian safety are considered. Furthermore, the benefits of reductions in harmful emissions without recourse to large banks of batteries are made apparent. Importantly, the use of Professor Suh’s axiomatic design paradigm enables such a complicated transportation system to be developed at reasonable cost and delivered on time. The book covers both the detailed design and the relevant systems-engineering knowledge and draws on experience gained in the successful implementation of OLEV systems in four Korean cities. The introduction to axiomatic design and the in-depth discussion of system and technology development provided by The On-line Electric Vehicle is instructive to graduate students in electrical, mechanical and transportation engineering and will help engineers and designers to master the efficient, timely and to-cost implementation of large-scale networked systems. Managers responsible for the running of large transportation infrastructure projects and concerned with technology management more generally will also find much to interest them in this book.
