

1. Record Nr.	UNINA9910139248503321
Titolo	Automotive electricity [[electronic resource]] : electric drives // edited by Joseph Beretta
Pubbl/distr/stampa	London, : ISTE Ltd. Hoboken, N.J., : J. Wiley, 2010
ISBN	1-118-61737-1 1-118-55754-9 1-299-31532-1 1-118-61762-2
Edizione	[1st edition]
Descrizione fisica	1 online resource (332 p.)
Collana	ISTE
Altri autori (Persone)	BerettaJoseph
Disciplina	629.22/93
Soggetti	Electric automobiles - Motors Electric automobiles - Electric equipment Electric driving
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	First published in 2005 France by Hermes Science/Lavoisier entitled: Le genie électrique automobile : la traction électrique.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Automotive Electricity; Title Page; Copyright Page; Table of Contents; Preface; Chapter 1. Introduction; 1.1. Automotive constraints; 1.2. Key figures from the automotive industry - data from the CCFA (association of French car manufacturers); Chapter 2. Basic Definitions; 2.1. Basic concepts; 2.1.1. Basics of automotive energy; 2.1.2. Basics of automotive dynamics; 2.2. The different electric drive-train systems; 2.2.1. Basic definitions; 2.2.2. Definitions of drive-train systems; 2.2.3. Thermal-electric hybrid systems; 2.2.4. Complex hybrids; Chapter 3. Electric-Powered Vehicles 3.1. History 3.2. Battery-powered electric vehicles; 3.2.1. Battery sizing; 3.2.2. Vehicle specifications; 3.2.3. Calculating the vehicle weights; 3.2.4. Application on a small vehicle; 3.3. Recharging systems for electric vehicles; 3.3.1. What is battery charging?; 3.3.2. The various types of chargers; 3.3.3. Recharging efficiency; 3.3.4. Recharging in complete safety; 3.4. Thermal/electric hybrid vehicles; 3.4.1. Assessment of traditional motorizations; 3.4.2. Implementation of

hybrid transmissions; 3.4.3. Context of research concerning hybrid transmission
3.4.4. Functionalities of hybrid architectures 3.4.5. Evaluation of hybrid vehicles; 3.4.6. The first vehicles on the market; 3.5. Fuel-cell vehicles; 3.5.1. History, introduction; 3.5.2. Choosing the kind of fuel cell; 3.6. Bibliography; 3.7. Summary table of fuel-cell (PEM) vehicle prototypes (as of February 2005); Chapter 4. The Components of Electric-Powered Vehicles; 4.1. Electric motors; 4.2. Electronic converters; 4.2.1. Characteristics of electric vehicles; 4.2.2. Components of electronic converters; 4.2.3. Generators - receivers - sources; 4.2.4. Rectifiers; 4.2.5. Choppers
4.2.6. Inverters 4.3. Batteries and static storage systems; 4.3.1. The different electrochemical couples for batteries; 4.3.2. Positioning of Ni-MH and Li-ion batteries for different applications; 4.3.3. Recycling processes; 4.4. The fuel cell and on-board fuel storage; 4.4.1. History of the fuel cell; 4.4.2. The different fuel-cell technologies; 4.4.3. The PEM fuel cell; 4.4.4. Technology and cost of fuel-cell components; 4.4.5. Peripherals of the fuel cell; 4.4.6. Numerical modeling of the fuel cell; 4.4.7. The fuel and its storage; 4.4.8. Conclusions; 4.5. Bibliography
Chapter 5. Prospects and Evolutions of Electric-Powered Vehicles: What Technologies by 2015 5.1. Mobility; 5.2. New technologies; 5.2.1. Electric motors; 5.2.2. Electronic power systems; 5.2.3. Electric energy sources; 5.3. New cars; Automobile Glossary; Appendices; Appendix 1. European regulation emissions for light vehicles; Appendix 2.a. Example of hybrid parallel transmission with flywheel storage; Appendix 2.b. Example of hybrid parallel transmission with oleo-pneumatic storage; Appendix 3. Example of function allocation; Appendix 4. Toyota Prius engine; List of authors; Index

Sommario/riassunto

Since the beginning of the century, electrical goods have invaded our everyday lives. Now, electric power is coming to be seen as a solution to the pollution caused by cars. While this transition has remained very slow during the last ten years, it has been accelerating as the statutory constraints and needs of the market have changed. Even if the electric car itself fails to dominate the market, electric traction is taking an important place in our drive to move away from gas-powered vehicles. Another solution, hybrid vehicles, combine two sources of energy (electric and chemical), reducing
