1. Record Nr. UNINA9910820687503321 Autore Lowry John <1948-> Titolo Electric vehicle technology explained [[electronic resource] /] / John Lowry, James Larminie Hoboken, N.J., : Wiley, 2012 Pubbl/distr/stampa **ISBN** 1-118-36112-1 1-62198-229-7 1-280-87988-2 9786613721198 1-118-36111-3 1-118-36114-8 1-118-36113-X Edizione [2nd ed.] Descrizione fisica 1 online resource (342 p.) Altri autori (Persone) LarminieJames Disciplina 629.22/93 Soggetti Electric vehicles - Technological innovations Electric vehicles - Design and construction Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Electric Vehicle Technology Explained; Contents; About the Author; Preface; Acknowledgments; Abbreviations; Symbols; Chapter 1 Introduction; 1.1 A Brief History; 1.1.1 Early Days; 1.1.2 The Middle of the Twentieth Century; 1.1.3 Developments towards the End of the Twentieth Century and the Early Twenty-First Century; 1.2 Electric Vehicles and the Environment; 1.2.1 Energy Saving and Overall Reduction of Carbon Emissions: 1.2.2 Reducing Local Pollution: 1.2.3 Reducing Dependence on Oil; 1.3 Usage Patterns for Electric Road Vehicles: Further Reading Chapter 2 Types of Electric Vehicles-EV Architecture 2.1 Battery Electric Vehicles; 2.2 The IC Engine/Electric Hybrid Vehicle; 2.3 Fueled EVs; 2.4 EVs using Supply Lines; 2.5 EVs which use Flywheels or Supercapacitors; 2.6 Solar-Powered Vehicles; 2.7 Vehicles using Linear Motors; 2.8 EVs for the Future; Further Reading; Chapter 3 Batteries,

Flywheels and Supercapacitors; 3.1 Introduction; 3.2 Battery

Parameters; 3.2.1 Cell and Battery Voltages; 3.2.2 Charge (or Amphour)

Capacity; 3.2.3 Energy Stored; 3.2.4 Specific Energy; 3.2.5 Energy Density; 3.2.6 Specific Power

3.2.7 Amphour (or Charge) Efficiency 3.2.8 Energy Efficiency; 3.2.9 Self-discharge Rates; 3.2.10 Battery Geometry; 3.2.11 Battery Temperature, Heating and Cooling Needs; 3.2.12 Battery Life and Number of Deep Cycles; 3.3 Lead Acid Batteries; 3.3.1 Lead Acid Battery Basics; 3.3.2 Special Characteristics of Lead Acid Batteries; 3.3.3 Battery Life and Maintenance; 3.3.4 Battery Charging; 3.3.5 Summary of Lead Acid Batteries; 3.4 Nickel-Based Batteries; 3.4.1 Introduction; 3.4.2 Nickel Cadmium; 3.4.3 Nickel Metal Hydride Batteries; 3.5 Sodium-Based Batteries; 3.5.1 Introduction

3.5.2 Sodium Sulfur Batteries 3.5.3 Sodium Metal Chloride (ZEBRA) Batteries; 3.6 Lithium Batteries; 3.6.1 Introduction; 3.6.2 The Lithium Polymer Battery; 3.6.3 The Lithium Ion Battery; 3.7 Metal-Air Batteries; 3.7.1 Introduction; 3.7.2 The Aluminium-Air Battery; 3.7.3 The Zinc-Air Battery; 3.8 Supercapacitors and Flywheels; 3.8.1 Supercapacitors; 3.8.2 Flywheels; 3.9 Battery Charging; 3.9.1 Battery Chargers; 3.9.2 Charge Equalisation; 3.10 The Designer's Choice of Battery; 3.10.1 Introduction; 3.10.2 Batteries which are Currently Available Commercially

3.11 Use of Batteries in Hybrid Vehicles 3.11.1 Introduction; 3.11.2 IC/Battery Electric Hybrids; 3.11.3 Battery/Battery Electric Hybrids; 3.11.4 Combinations using Flywheels; 3.11.5 Complex Hybrids; 3.12 Battery Modelling; 3.12.1 The Purpose of Battery Modelling; 3.12.2 Battery Equivalent Circuit; 3.12.3 Modelling Battery Capacity; 3.12.4 Simulating a Battery at a Set Power; 3.12.5 Calculating the Peukert Coefficient; 3.12.6 Approximate Battery Sizing; 3.13 In Conclusion; References; Chapter 4 Electricity Supply; 4.1 Normal Existing Domestic and Industrial Electricity Supply

4.2 Infrastructure Needed for Charging Electric Vehicles

## Sommario/riassunto

Fully updated throughout, Electric Vehicle Technology, Second Edition, is a complete guide to the principles, design and applications of electric vehicle technology. Including all the latest advances, it presents clear and comprehensive coverage of the major aspects of electric vehicle development and offers an engineering-based evaluation of electric motor scooters, cars, buses and trains. This new edition includes: important new chapters on types of electric vehicles, including pickup and linear motors, overall efficiencies and energy consumption, and power generat