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Nota di contenuto	Front Cover; Title Page; Copyright Page; Table of Contents; List of Figures; Preface; Organization of the Book; Acknowledgments; Chapter 1 Introduction; Energy in Today's World; Energy on Planet Earth; What Are the Right Questions?; Sustainable Nuclear Power; Chapter 2 The History of Energy; Energy; Nature's Methods of Storing Energy; Man's Interaction with Nature's Stockpiles and Renewable Energies; The Industrial Revolution and Establishment of Energy Empires; Environmental Impact; Environmentally Responsible Nuclear Power; References Chapter 3 Energy Reserves and Renewable Energy Sources Fossil Fuel Reserves; Cosmic History of Fossil Energy Reserves; Nuclear Energy; Recent Solar Energy; Ethanol and Biodiesel from Agricultural Commodities; Emergence of Nuclear Power; References; Chapter 4 Emerging Fuel Technologies and Policies Impacting These Technologies; Politics of Change in the Energy Industry; Cost of Feedstock Resources; Case Study on Investment Decisions and Policy Impacts; Taxes and Social Cost; Corporate Lobbying Retrospect;

Diversity as a Means to Produce Market Stability; The Details Are Important

Environmental RetrospectEfficiency and Breakthrough Technology; Farm Commodities and Land Utilization; Global Warming; Diversity and the Role of Nuclear Power; References; Chapter 5 History of Conversion of Thermal Energy to Work; Use of Thermal Energy; The Concept of Work; Early Engine Designs; Turbine-Based Engines; Fuel Cells;

Recommended Reading; General References; References; Chapter 6 Transportation; Transportation Before Petroleum Fuels; Petroleum Fuels: Their Evolution, Specification, and Processing; Alternative Fuels; Vehicular Fuel Conservation and Efficiency; References

Chapter 7 Production of ElectricityHistory of Production; Production of Electrical Power; Recommended Reading; References; Chapter 8 Energy in Heating, Ventilation, and Air Conditioning; The Heating, Ventilation, and Air Conditioning Industry; Air Conditioning; Heating; Peak Load Shifting and Storing Heat; The Role of Electrical Power in HVAC to Reduce Greenhouse Gas Emissions; Example Calculations; References; Chapter 9 Electrical Power as Sustainable Energy; Sustainability and Electrical Power; Expanded Use of Electrical Power; Increased Use of Electrical Power in Transportation

Increased Use of Electrical Power in Space HeatingIncreased Use of Electrical Power for Hot Water Heating; Topics of National Attention; Example Calculations; Recommended Reading; References; Chapter 10 Atomic Processes; Energies of Nuclear Processes; Chart of the Nuclides; Nuclear Decay; Conditions for Successful Nuclear Fission; Transmutation; Nuclear Fusion; Radiological Toxicology; References; Chapter 11 Recycling and Waste Handling for Spent Nuclear Fuel; The Nuclear Energy Industry; Recycling and Green Chemistry; Why Reprocess Spent Nuclear Fuel?; Discovery and Recovery Reprocessing: Recovery of Unused Fuel

Sommario/riassunto

Sustainable Nuclear Power provides non-nuclear engineers, scientists and energy planners with the necessary information to understand and utilize the major advances in the field. The book demonstrates that nuclear fission technology has the abundance and attainability to provide centuries of safe power with minimal greenhouse gas generation. It also addresses the safety and disposal issues that have plagued the development of the nuclear power industry and scared planners and policy makers as well as the general public for more than two decades. In addition, the authors provide a Companion we
