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Nuclear Power to the World's Energy Mix and Energy Security; 2.2 Installed Nuclear Power Capacity in 2011; 2.2.1 Power Up-rates of NPPs; 2.2.2 Operational Issues Caused by Power Up-rates; 2.2.3 Licensing Aspects for Continued Operation of Current Generation NPPs; 2.2.4 Nuclear Fuel Supply; 2.2.5 Radioactive Waste Aspects 2.2.6 Operational and Economic Features of NPPs 2.2.7 Knowledge Management, Training, and Personnel Requirements; 2.2.8 Currently Operating Nuclear Power Plant Designs and Status; 2.2.8.1 Generation I NPPs; 2.2.8.2 Generation II NPPs; 2.2.8.3 Generation III and III+ NPPs; 2.2.8.4 Generation IV; 2.2.9 Nuclear Fuel Core Damage Frequency (CDF); 2.3 Discussion; 2.4 Conclusions; 2.5 Further Reading; References; Chapter 3 Seismic Probabilistic Risk Assessment for Nuclear Power Plants; 3.1 Introduction; 3.2 Conventional SPRA Methodologies; 3.2.1 Seismic Hazard Analysis 3.2.2 Component Fragility Evaluation 3.2.3 Plant-System and Accident-Sequence Analysis; 3.2.3.1 Event Trees; 3.2.3.2 Fault Trees; 3.2.4 Consequence Analysis; 3.3 The Methodology of Huang et al.; 3.3.1 Step 1: Analysis of Plant Systems and Accident Sequences; 3.3.2 Step 2: Characterization of Seismic Hazard; 3.3.3 Step 3: Simulation of Structural Responses; 3.3.4 Step 4: Damage Assessment of NPP Components; 3.3.5 Step 5: Risk Computation; 3.4 Summary and Conclusions; References; Chapter 4 Seismic Abatement Method for Nuclear Power Plants and Seismic-Isolation Systems for Structural Elements 4.1 Main Principles of the Method 4.2 Theorem and Proof; 4.3 Finite Element Construction; 4.4 Pros and Cons of the Method; 4.4.1 Advantages of the Method; 4.4.2 Disadvantages of the Method; 4.5 Application of the Method to Seismic Isolation Design of Whole Building; 4.6 Seismic Isolation Devices to Protect Various Elements and Units; 4.7 Applications; 4.8 Conclusions; References; Chapter 5 Framework for Design of Next-Generation Base-Isolated Nuclear Structures; 5.1 Introduction; 5.2 Development of Seismic Isolation Systems; 5.2.1 Applications of Seismic Isolation; 5.2.2 Seismic Isolator Units 5.3 Seismic Isolation of New Nuclear Power Plant Structures

Sommario/riassunto

"Infrastructure Systems for Nuclear Energy summarizes this progress with an up-to-date reference to guide the future research and design of infrastructure systems for nuclear energy"--
