Energies

an Open Access Journal by MDPI

CiteScore: 7.3
Impact Factor: 3.2

Special Issue Reprint

AI-Driven Sustainable Power Grids

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The Special Issue, entitled 'AI-Driven Sustainable Power Grids: Enhancing Cybersecurity, Operation and Control of Conventional, Modern and Renewable-Based Energy Systems', addresses the urgent transformation of global energy systems toward sustainable, reliable, and intelligent infrastructures. Growing energy demand, environmental concerns, and greenhouse gas reduction commitments have accelerated renewable energy integration and digitalization. Power systems are evolving into decentralized, data-driven smart networks, leveraging AI, IoT, advanced optimization, and digital communication to improve planning, operation, and control while tackling grid stability, cybersecurity, and energy management challenges. This Special Issue presents high-quality research covering optimal scheduling for smart homes with hybrid renewable systems, knowledge extraction for substation diagrams, multi-objective optimization for load flow analysis, coordinated voltage regulation, AI-powered digital twin frameworks, cybersecurity for distributed energy systems, EV charging infrastructure, and control strategies for photovoltaic networks under uncertainty. We sincerely thank all authors for their contributions and reviewers for ensuring scientific quality. We also appreciate the editorial staff of *Energies* for their support throughout the publication process. We hope this Special Issue serves as a valuable reference for researchers, engineers, policymakers, and practitioners in renewable energy, smart grids, and AI applications in power systems.

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