Emerging Intelligent Techniques for Energy Managements in Smart Cities

Proceedings of 1st International Conference on Intelligent Energy Management in Smart Cities (ICIEMSC-2021) https://iciemsc2021.uem.edu.in/

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e-ISBN: 9788770227520

Description:

Almost all over the world several countries are striving to build smart cities in order to increase productivity and socio-economic growth. Although there are several aspects of a smart city, but here, in this book entitled "Emerging Intelligent Techniques for Energy Managements," we would like to highlight some intelligent techniques from the "Energy" perspective. Intelligence is intangible. It is composed of reasoning, learning, problem solving, perception, and Artificial Intelligence (AI). AI is composed of two words Artificial and Intelligence, where Artificial defines "man-made", and intelligence defines "thinking power", hence AI means "a man-made thinking power". The objectives of energy management are to record, control, and optimize the real-time energy consumption in different residential, commercial and industrial spaces in smart cities using emerging techniques developed with the help of artificial intelligence. Requirement of a strategy that is compatible with different real-world driving scenarios has opened a significant field of study for researchers in the era of energy management.

This book aims to provide intelligent energy management strategies recently developed for smart cities with their comparison to give readers an experimental view. It also provides the categorization of them into principle-based, data-driven, and composite methods. Future trends and existing challenges are also presented in the book, which generate fresh insight into energy management strategies. Recent advancements in artificial intelligence, electrical vehicles, green building, integration of renewable energy sources and demand response approaches have facilitated developing different strategies for an intelligent energy management system. The book also provides valuable information on design of micro-grids and integration of green energy sources with the power grid. Some of the topics include the development of demand side management techniques and their implementation for energy management in smart cities. This book also includes the recent techniques developed in management of distributed energy sources and storage systems. The contents of this book will be useful for researchers and practitioners working in different areas of smart grid technology.

Keywords: Smart grid, renewable energy, Artificial Intelligence, Energy Management, Green Building, Energy Efficiency, Demand Side Management, Load Forecasting, Optimization

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