

Energy efficient buildings facilitated by microgrid

Recent research shows that 20%-30% of building energy consumption can be saved through optimized operation and management without changing the building structure and the hardware configuration of the energy supply system. Therefore, there is a huge potential for building energy savings through efficient operation. Microgrid technology provides an opportunity and a ...

Energy-efficient buildings facilitated by microgrid. X Guan, Z Xu, QS Jia. IEEE Transactions on smart grid 1 (3), 243-252, 2010. 653: ... Distributed coordination of EV charging with renewable energy in a microgrid of buildings. Y Yang, QS Jia, G Deconinck, X Guan, Z Qiu, Z Hu. IEEE Transactions on Smart Grid 9 (6), 6253-6264, 2017. 168:

Because of this focus, buildings and their role in microgrid operation are central in the first five papers. These articles treat both smart microgrids and energy-efficient buildings, with the main emphasis on the interplay between them. The sixth and seventh papers discuss new approaches to simulation and monitoring that have

This paper reviews the system components, modeling, and control of microgrids for future smart buildings in current literature. Microgrids are increasingly widely studied due to their reliability in the event of grid failure or emergency, their incorporation of renewable energy sources, and the potential they represent for overall cost reduction for the consumer.

Microgrid technology provides an opportunity and a desirable infrastructure for improving the efficiency of energy consumption in buildings. The key to improve building energy efficiency in ...

Fig. 1. Energy system of buildings. - "Energy-Efficient Buildings Facilitated by Microgrid" Skip to search form Skip to main content Skip to ... Search. Sign In Create Free Account. DOI: 10.1109/TSG.2010.2083705; Corpus ID: 12910183; Energy-Efficient Buildings Facilitated by Microgrid @article{Guan2010EnergyEfficientBF, title={Energy-Efficient ...

By appropriately implementing a smart building operator (SBO) within a building automation system (BAS), recent research has shown that energy distribution through facility microgrids ...

Creative solutions by the architectural and engineering team capitalize on the design of a unique glazing system; energy efficient technologies; water use reduction techniques; and a combined ...

These energy systems bring great chances for improving building energy efficiency while at the same time increase the difficulty of managing the building operation. ... (2010) Energy-efficient buildings facilitated by microgrid. IEEE Trans Smart Grid 1(3):243-252. Article Google Scholar Xu Z, Jia Q-S, Guan X (2015) Supply demand coordination ...

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Modern society has a growing need for the electricity. To protect the environment, future energy demand must be met with more environmentally friendly technologies, such as renewable energy sources. Because of its vast availability, solar radiation has been used for decades to generate electricity through photovoltaic systems (PV) for residential, educational, ...

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Renewable energy integration and the energy system's resilience, reliability, and flexibility are increasingly discussed together in literature focusing on microgrid application at various scales [18], [103], [108]. While the microgrid is discussed more in the context of community electrification and as an off-grid solution, their applications include grid-connected commercial, institutional ...

These buildings are energy efficient: High-quality walls and windows, high-performance appliances and equipment, and optimized building designs ... devices, and a microgrid on a community-wide scale for the first time in the Southeast. With 62 homes, it supports the community's energy needs by using ...

Buildings are responsible for about 40% of energy consumption and more than 40% of greenhouse gas emissions []. Reducing energy consumption and subsequently, CO₂ emissions are highly required since buildings frequently use more energy than anticipated or desired. This need for energy requires the integration of clean energy sources in order to ...

Energy-Efficient Buildings Facilitated by Microgrid Therefore, there is a huge potential for building energy savings through efficient operation. Microgrid technology provides an opportunity and a desirable infrastructure for improving the efficiency of energy consumption in buildings. The key to improve building energy efficiency in ...

From the point of view of a microgrid energy management system, economic scheduling of generation devices, storage systems and loads is a crucial problem. ... Energy-efficient buildings facilitated by microgrid. IEEE Trans Smart Grid 1(3):243-252. Article Google Scholar Hatziargyriou N, Asano H, Iravani R, Marnay C (2007) Microgrids. IEEE ...

Guan, Z. Xu and Q.S. Jia, Energy efficient buildings facilitated by microgrid, IEEE Trans. Smart Grid, vol. 1, no. 3, pp. 243-252, 2010. [4] Emanuel Cristoni, Marco Raugi and Robert Shorten, Plug and Play distributed algorithm for optimized power generation in a microgrid, IEEE transactions on Smart grid, vol.4, pp.2145-2154, 2014. [5 ...

Xiaohong Guan; Zhanbo Xu; Qing-Shan Jia; Energy-Efficient Buildings Facilitated by Microgrid Smart Grid,

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IEEE Transactions on 2010, 243âEUR"252. [14] Wang Liping, Yang Dezhou, Zhang Jun. âEURoeStudy of large-scale PV power system control principle and grid-connected characteristicsâEUR, Power Electronics, 2010, 44(6) (in Chinese). [15]

According to the U.S. Department of Energy, about 40% of total energy is consumed on buildings in industrialized countries, among which 68% is electricity. Recently research shows that 20%~30% of building energy consumption can be saved with optimized operation and management without changing building structure and hardware configuration of energy supply ...

The annual energy demand for the building was estimated by making seasonal adjustments to the weekly Proposed energy efficiency measures Total energy consumption (%) the main grid to provide reserve, peak-saving, and demand response services and provides improved capability for integration of renewable energy sources [26].

Microgrid Momentum: Building Efficient, Resilient Power. Microgrids are not a traditional or typical infrastructure investment for utilities, nor has the existing electric power industry been structured to facilitate development of microgrids by non-utilities. This research paper seeks to identify financial and legal barriers to the development ...

This paper reviews the recent literature surrounding building-integrated microgrids (BIMGs) and their energy management systems (EMS), with a focus on component modeling ...

Sustainable Design of a Nearly Zero Energy Building Facilitated by a Smart Microgrid GandhiHabash, 1 DanielChapotchkin, 1 PeterFisher, 2 AlecRancourt, 2 RiadhHabash, 2 andWillNorris 3 Azrieli School of Architecture and Urbanism, ...

With the introduction of smart energy grids and extensive penetration of renewable energy resources in distribution networks, Micro-Grids (MGs), which are comprised of various alternative energy resources and Advanced Metering Infrastructure (AMI) systems for better implementation of DR programs, are effectively employed.

A real-world case study is presented in this paper. The goal is to minimize the cost of the energy flows in an existing microgrid, called Leaf Community Footnote 1, consisting of a photovoltaic and a hydroelectric power plant, a battery storage, an office building and an industrial facility (see Fig. 1 for a schematic representation). The management of the MG units requires ...

In this paper, we consider the energy management for a building microgrid considering a probabilistic constraint on the renewable energy utilization. Facilitated by the microgrid technology with integrated renewable energy resources, we assume that the building microgrid can participate in the electricity market to efficiently utilize the renewable energy and reduce ...

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The impact of the occupant comfort model on the energy efficiency of the overall building and the choice of the storage devices capacities are also discussed. We hope this work brings insight on green buildings with group dynamics among occupants in more general situations. ... Energy Efficient Buildings Facilitated by Microgrid. IEEE Trans. on ...

The total energy consumed during building operations is determined by the building energy efficiency and the total demand. On the one hand, though most existing studies focus on improving building ...

Number 11, Year 2015 Page 19-28 Improving energy efficiency in buildings using microgrids IMPROVING ENERGY EFFICIENCY IN BUILDINGS USING MICROGRIDS Mario Primorac Josip Juraj Strossmayer University of Osijek, Faculty of Electrical Engineering, Expert Associate Corresponding author: mprimorac@etfos.hr Mario ?ipo? Croatian Armed Forces, Zagreba?ka ...

A secure energy routing mechanism for sharing renewable energy in smart microgrid. In: Proceedings of IEEE International Conference on Smart Grid Communications (SmartGridComm) (October 2011) Google Scholar Erol-Kantarci, M., Kantarci, B., Mouftah, H.T.: Cost-Aware Smart Microgrid Network design for a sustainable smart grid.

Guan X H, Xu Z B, Jia Q S. Energy-efficient buildings facilitated by microgrid. IEEE Trans Smart Grid, 2010, 1: 243-252. Article Google Scholar Ilic M D, Xie L, Khan U A, et al. Modeling of future cyber-physical energy systems for distributed sensing and control. IEEE Trans Syst Man Cybern A, 2010, 40: 825-838. Article Google ...

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