

What are the advantages of a smart grid?

It is known that smart grids offer multiple advantages such as promotion of Renewable Energy Sources (RES) and energy savings[1]. A smart grid is an electricity network that delivers electricity in a controlled way (from the generation points to the consumers) [2].

Why should energy storage be used in a smart grid?

Certain RES such as wind and solar energy depend on the weather. Consequently, the grid operators should adopt certain strategies, including energy storage, in order to balance the supply with the demand[42]. Storage systems play a pivotal role in the flexibility of the distribution networks and smart grids.

What is a smart grid?

Smart grids are known to be next-generation conventional grids due to the information flow capabilities and two-ways power supply. It integrates the actions of all users and facilitates the bidirectional operation of the distribution of the system for delivering a sustainable and economic electric supply.

Are energy storage systems suitable for smart-grid applications?

There are different storage systems that are suitable for smart-grid applications and energy storage offers flexibility for modern power generation. However, there are some crucial factors (recycling, toxic materials, etc.) that should be taken into account.

What is the future of smart grid?

The future smart grid is facilitated by the efficient demand response mechanism (DRM) which is based on the energy consumers capable of providing a flexible schedule for energy consumption and supply . Since smart grids are under the threat of cyber terrorism, cyber security measure is being developed. Malicious attacks need to be prevented.

Can a smart grid be combined with a PV system?

In the literature on smart systems, there are a few studies which examine the combination of PVs with smart grids, especially in relation to Building-Integrated Photovoltaic (BIPV) configurations. During the last ten years, there has been an increasing interest in BIPV applications in urban buildings.

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