

Photovoltaic-powered smart home system with direct current-environment

ABSTRACT

This paper provides a comprehensive literature survey that has needed due to the growing interest in solar-powered smart home systems. This article addresses the smart home technologies that consider the DC-environment as a power distribution topology as well as the home energy management system. A related applications, definitions, and information about the suitable household appliances that available in local market as components of such systems. A new recommended approach to solve the associated challenges with efficient DC-environment and energy management systems, and the factors of energy savings that contribute to grow up the efficiency are discussed. Several statistical analysis and household appliances classification for optimization problems are also addressed, together with a review of the literature related to solar-powered smart home system with respect to its power scale, management algorithm, and automation strategy.

Keyword: Energy Management System (EMS); Household appliances; Smart grid; Smart home; Solar power