

In this paper, the main objective is the simulation of the electric supply for homes in remote areas located in Morocco (Oujda and Ouarzazate), Spain (Granada), and Algeria (Bechar). This simulation study is divided into two ideas, the first one is to optimize the hybrid system under a varied number of houses and the second part is to fix it in chosen ...

Owing to limited capacity of fossil fuel resources, renewable sources of energy such as solar and wind are attracting interests as an alternative. Meanwhile, hybrid systems suggest better ...

In remote rural communities, the need for energy-efficient and reliable energy supply is becoming a driving force for research about the stand-alone Hybrid Renewable Energy Systems (HRES) []. These HRESs are considered to be the most efficient and cost-effective way of electrifying off-grid communities, where extension of utility grid is not possible [].

In stand-alone power systems, technical, economic, and environmental (TEE) assessment of hybrid energy systems under uncertainty is an important issue. This paper focuses on the TEE assessment of a stand-alone hybrid energy system composed of photovoltaic (PV) and diesel generator (DG) with/without battery energy storage (BS) in remote islands in China. ...

In contrast, integrating renewable energy sources with traditional energy sources in buildings can be crucial in reducing greenhouse gas emissions and achieving zero carbon emissions [4]. Stand-alone Hybrid Energy Systems (HES) combine conventional and renewable energy sources that do not require grid connection [5], [6]. Stand-alone HES is more efficient ...

This paper presents a model for designing a stand-alone hybrid system consisting of photovoltaic sources, wind turbines, a storage system, and a diesel generator. The aim is to determine the optimal size to reduce the cost of electricity and ensure the provision of ...

Securing reliable access to electricity stands as a pivotal factor in the capacity of any community to flourish. Hence, it becomes imperative for all nations to formulate robust ...

The optimum exploitation of renewable energy sources is very important to all countries of the world, especially in the developing countries, like Algeria. Solar photovoltaic energy is one of the important renewable energy technologies, due to their high reliability and safety. In this paper a stand-alone system is designed and analyzed for the ...

Comparative study of stand-alone and hybrid solar energy systems suitable for off-grid rural electrification: a

review. *Renew Sustain Energy Rev*, 27 ... Promotion of renewable energies in Algeria: strategies and perspectives. *Renew Sustain Energy Rev*, 15 (2) (2011), pp. 1169-1181. View PDF View article View in Scopus Google Scholar

The study system used in this work is based on the hybrid system installed in south Algeria (Illizi). ... results demonstrate the advantages of utilizing the hybrid optimization ...

This paper presents an adaptive robust approach for optimal sizing of a stand-alone hybrid renewable energy system (HRES) composed of wind turbines, solar photovoltaic panels, a battery bank, and a diesel generator. Unlike classical robust HRES sizing models that capture the unpredictable nature of renewable energy sources through static uncertainty sets ...

Multi-Objective Optimization of Stand-Alone Hybrid Renewable Energy System for Rural Electrification in Algeria Hadda Zereg(B) and Hassen Bouzgou Departement of Industrial Engineering, Laboratory of Automation and Manufacturing, University of Batna 2, Batna, Algeria {h.zereg,h.bouzgou}@univ-batna2.dz Abstract.

In Ref. [6] an advanced energy management strategy for a stand-alone hybrid energy system including a photovoltaic panel, a fuel cell, an electrolyzer, a battery bank and a super capacitor was considered. ... A review on the renewable energy development in Algeria: current perspective, energy scenario and sustainability issues. *Renew Sustain ...*

This paper aims to study the techno-economical feasibility of a photovoltaic-diesel-battery hybrid energy system (HES) destined to electrify a research unit (UDES) located in the north of Algeria. For this aim several scenarios have been studied for a photovoltaic penetration varying from 0% to 100% including a stand-alone diesel system and a ...

A review on the renewable energy development in Algeria: current perspective, energy scenario and sustainability issues. *Renew Sustain Energy Rev*, 16 ... Techno-economic analysis of a stand-alone hybrid renewable energy system with hydrogen production and storage options. *Int J Hydrogen Energy*, 40 (24) (2015), pp. 7652-7766.

Eteiba et al. [18] have presented a comparison of four optimization techniques to determine the optimal sizing of a rural stand-alone PV-biomass-battery energy system while utilizing the minimization of the Net Present Cost (NPC) as the objective function for the proposed optimization methods. The used algorithms are the Flower Pollination ...

Algeria's renewable energy potential map is created using a multi-criteria spatial study. Adrar and Tindouf have the best configuration for low-performance structures, whereas Biskra and Tamenrast have the best configuration for high-performance buildings. ... more dependable electricity than a stand-alone hybrid system

when considering the ...

Off-grid renewable energy sources (RES) particularly solar, have been promoted as a sustainable way to increase electrification in rural areas in both small stand-alone systems and micro-grids (Mandelli et al. Citation 2016).

Techno-economic optimization analysis of stand-alone renewable energy system for remote areas. Sustainable Energy Technologies and Assessments, 38 (2020), ... Potential, optimization and sensitivity analysis of photovoltaic-diesel-battery hybrid energy system for rural electrification in Algeria. Energy, 169 (2019), pp. 613-624.

The exploitation of renewable energies in the electrification of buildings in the isolated sites in our country represents a solution to the problem of connecting the electrical ...

Feasibility study and energy conversion analysis of stand-alone hybrid renewable energy system. Author links open overlay panel Fazia Baghdadi a, Kamal Mohammedi b, Said Diaf c, Omar Behar d. Show more. Add to Mendeley. ... There is a great interest in the development of renewable power technologies in Algeria, and more particularly hybrid ...

This paper presents a model for designing a stand-alone hybrid system consisting of photovoltaic sources, wind turbines, a storage system, and a diesel generator. The aim is to determine the optimal size to reduce the cost of electricity and ensure the provision of electricity at lower and more reliable prices for isolated rural areas.

The authors developed a HOGA (hybrid optimization with genetic algorithm) program using GA in C++. Dufo-L&#243;pez et al. [55] developed a new strategy using genetic algorithm to optimize lifetime total costs and system control for stand-alone hybrid renewable energy systems that may include components like PV, wind, hydro, hydrogen and batteries ...

An optimal sizing method for stand-alone photovoltaic system for Algeria. Proceedings of World Renewable Energy Congress VII; 2002 on CD-ROM. ... Artificial intelligence in renewable energy systems modeling and prediction, Proceedings of World Renewable Energy Congress VII; 2002 on CD-ROM. Google Scholar [28]

Various aspects and problems must be taken into account when the major discuss is about the optimization of a stand-alone hybrid system [11], [12].Optimizing cost, reliability, design and control, placement and acceptable power quality are some of these problems [13] recent research works for optimization of a RE unit, there are an increase in ...

This paper presents a methodology for optimal design of diesel/PV/wind/battery hybrid renewable energy system (HRES) for the electrification of residential buildings in rural ...

Size optimization of new hybrid stand-alone renewable energy system considering a reliability index. 2012 11th International Conference on Environment and Electrical Engineering, IEEE (2012), ... optimization and sensitivity analysis of photovoltaic-diesel-battery hybrid energy system for rural electrification in Algeria. Energy, 169 (2019), pp ...

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