

Can microgrids be developed in remote areas of the Algerian Sahara?

This paper presents a model and simulation for the development of microgrids in remote areas of the Algerian Sahara, including micro power plants, photovoltaic panels, wind farms, diesel energy and storage facilities. The climate of the Algerian Sahara, located on both sides of a tropical region, is hot, sunny and arid.

How much solar energy does Algeria have?

This means that the country enjoys from 1700 to 2,263 kWh/m²/year of solar energy (Maoued et al. 2015). The south of Algeria has significant wind resources, especially the region of Adrar, where average wind speeds range from 4 to 6 m/s, which makes it very attractive for the deployment of wind farms (Maoued et al. 2015).

Where are solar panels made in Algeria?

Alongside Zergoun, the manufacturer Laguna Solaire has 200 MW of annual capacity for solar panel production in Algeria. The production plant of Algerian telecommunications and renewable energy company Milltech has a facility in Mila, in the east of the country, with a production capacity of 100 MW for M3-based modules. Manufacturing hub

What is the energy management strategy for a hybrid microgrid system?

The energy management strategy for the proposed hybrid microgrid system. The proposed energy management system in this work includes four modes of controlling the system's behavior in response to changes in energy supply and demand. 1.

How can Algeria attract investment in wind and solar energy?

The Algerian government is trying to attract investments in wind and solar energies by establishing suitable policies to install 5 GW of wind power and 13.6 GW of solar PV by 2030.

How can a microgrid improve the reliability of solar PV?

In order to overcome the problems associated with the intermittency of solar PV and enhance the reliability, energy storage systems like batteries and/or backup systems like diesel generators are commonly included in the microgrids [11,12].

In this study, the algorithms (SFS: Search Stochastic Fractal) and (SOS: Symbiotic Organisms Search) were used for the first time to optimize and design a Microgrid consisting of solar photovoltaic energy, wind turbines, batteries, and diesel generator in a rural area in Biskra city, Algeria. The main contributions of this study are as follows: o

This work proposes an optimized configuration of two hybrid systems designed for a microgrid network with the aim to improve the power supply in isolated areas and provide ...

The selected site for the proposed hybrid Microgrid system in this study in the city of Biskra, located in the Algerian Sahara, is distinguished by its abundant renewable energy resources and excellent record of wind speed and solar radiation.

This work proposes an optimized configuration of two hybrid systems designed for a microgrid network with the aim to improve the power supply in isolated areas and provide a low cost, more ...

The proposed hybrid system is an adequate solution to power shortages and grid problems faced in the region of Adrar during hot seasons. The proposed solution falls in line with the plan of Algeria to integrate wind and solar energy in its energy mix by 2030.

This paper describes the current situation of the renewable energies (RE) in Algeria and the structure of the national grid. In view of studying the issues of grid integration of injection of...

One of the most challenging tasks in designing a solar PV microgrid is to determine the optimal size of microgrid components, as it requires detailed knowledge of the different energy sources in the microgrid as well as their technical specifications, environmental conditions, and meteorological parameters of the area where the microgrid is to ...

The present work describes a methodological approach for optimal sizing of renewable energy systems in a microgrid, based on an inclusive study that focuses on three axes, which analysis of techno-economic and investment risk assessment for three combinations of microgrid systems, based on available renewable energy resources in the region of ...

This paper presents a model and simulation for the development of microgrids in remote areas of the Algerian Sahara, including micro power plants, photovoltaic panels, wind farms, diesel energy and storage facilities.

Web: <https://www.gmchrzaszcz.pl>