Solar power generation and thermodynamic analysis

The novelty of our study lies in the integration of the ORC cycle with the heliostat field"s solar collector for combined heating and power generation in a solar cogeneration system, addressing ...

In the present study, the most important parameters that affect the performance of a solar chimney power plant are investigated. The plant has a collector area of 7000 m diameter and a tower of 1000 m height. Under certain weather conditions, the results obtained show that the maximum electrical power of this plant can be reached in June and can be up to 119 MW. This ...

This paper presents a thermodynamic analysis and techno-economic assessment of a novel hybrid solar-biomass power-generation system configuration composed of an externally fired gas-turbine (EFGT ...

A novel solar hybrid system for upgrading and utilization of low-rank coal using coal pre-drying, low-temperature pyrolysis and power generation has been proposed. A comprehensive thermodynamic analysis has been performed in a case study for Zhundong lignite upgrading equipped with a 600 MW supercritical power plant.

The aforementioned literature review reveals that, in most of the researches on hybrid solar-biomass power generation systems, solar energy is employed as a heat source to provide the required thermal energy for thermochemical gasification reactions or to assist the steam generation via HRSG for the bottoming Rankine cycle.

Semantic Scholar extracted view of "Thermodynamic analysis of a geothermal-solar flash-binary hybrid power generation system" by Peipei Wan et al. ... @article{Wan2019ThermodynamicAO, title={Thermodynamic analysis of a geothermal-solar flash-binary hybrid power generation system}, author={Peipei Wan and Liang Gong and ...

Request PDF | Thermodynamics analysis of hybrid solar-biomass power generation system | The solar energy is an intermittent nature of source with diurnal variation. A constant rate of energy ...

Day to day rise in energy demand in power sectors motivates the researcher to focus on various renewable energy systems. Reduction in fossil fuels and increasing usage make the researchers find alternate resources such as solar, wind, and geothermal biomass (Devarajan et al. 2021).Among other renewable energy, solar energy is one of the most promising, and an ...

Through the system evaluation, the proposed geothermal-solar hybrid power generation system achieves favorable thermodynamic performances, and it provides an alternative way to improve the energy ...

Solar power generation and thermodynamic analysis

In line with the current trend of investigating methane and hydrogen-based power generation, A study provides a thorough thermodynamic analysis and assessment of nitrogen oxide emissions for a gas turbine fueled by a blend of methane and hydrogen in addition to pure hydrogen [18].

Thermodynamic analysis of geothermal and solar assisted power generation and heating system Ozan Sen*, Ceyhun Yilmaz Department of Mechanical Engineering, Faculty of Technology, Afyon Kocatepe University, Afyonkarahisar, 03200, Turkey Highlights: Graphical/TabularAbstract This geothermal and solar assisted cogenerated system

Pantaleo et al. [21] has explored a thermodynamic system with techno-economic evaluation of a new hybrid solar/biomass power-generation arrangement. They were able to recuperate the heat from the exhaust gases of the externally powered gas-turbine by thermal energy storage, and incorporation of heat from a parabolic-trough collector field wherein ...

A number of papers had investigated the utilization of solar energy as a primary source for power production (electricity generation) integrating with ORC. He et al. [17], for example, numerically simulated parabolic trough solar power generation system integrated with organic Rankine cycle in order to study

International Journal of Electrical, Energy and Power System Engineering, 2021. New and renewable energy sources such as solar, geothermal, and waste heat are energy sources that can be used as a source of energy for Organic ...

Selection and peer-review under responsibility of the scientific committee of the 10th International Conference on Applied Energy (ICAE2018). 10th International Conference on Applied Energy (ICAE2018), 22-25 August 2018, Hong Kong, China Thermodynamic analysis of a geothermal-solar flash-binary hybrid power generation system Peipei Wana, Liang Gonga, ...

The thermodynamic analysis results showed that, the overall energy and exergy efficiencies could reach 90.0% and 89.8%, respectively, with the product energy distribution ratio at 47.8 MJ/(kW h). ... "New solar-biomass power generation system integrated a two-stage gasifier," Applied Energy, Elsevier, vol. 194(C), pages 310-319. Ma, Youfu ...

Solar energy is a clean, dependable, and continuous source of energy that can be used to replace or supplement traditional power generation methods [2]. There are a variety of systems for utilizing the sun"s energy, for which Concentrated Solar Power (CSP) is the most efficient for power plants [3].

Syngas fuel such as hydrogen and carbon monoxide generated by solar energy is a promising method to use solar energy and overcome its fluctuation effectively. This study proposes a combined cooling, heating, and power system using the reversible solid oxide fuel cell assisted by solar energy to produce solar fuel and then

supply energy products for users ...

Request PDF | Thermodynamic analysis of a novel solar-hybrid system for low-rank coal upgrading and power generation | This work proposed and analyzed an integrated solar hybrid system for ...

In this work, a novel hybrid power generation system powered by solar and geothermal energies is proposed. The hybrid power generation system is composed of the recompression sCO 2 Brayton cycle and OFC. The ...

Abstract. This study offers a comprehensive assessment of the thermodynamic performance of a novel solar-based multigeneration system, which caters to the energy needs of a sustainable community by producing electricity, cooling, heating, and freshwater. The solar-based multigeneration system is comprised of four main components: the thermal subsystem ...

SOLAR CO-GENERATION OF ELECTRICITY AND WATER, LARGE SCALE PHOTOVOLTAIC SYSTEMS - ... Thermodynamic Analysis, Energy, Exergy, Photovoltaics Thermal, Concentrator Photovoltaics, Efficiency, SQ Limit, Upper Limit Efficiency Content 1. Introduction 1.1. Solar Photovoltaic Energy Conversion

Request PDF | Performance Analysis of the Low Temperature Solar-Boosted Power Generation System--Part II: Thermodynamic Characteristics of the Kalina Solar System | In part I of the current work ...

DOI: 10.1016/J.ENERGY.2017.11.046 Corpus ID: 116351484; Thermodynamic analysis of a novel solar-hybrid system for low-rank coal upgrading and power generation @article{Xu2017ThermodynamicAO, title={Thermodynamic analysis of a novel solar-hybrid system for low-rank coal upgrading and power generation}, author={ChengA Xu and ...

In this study, two schemes of solar electrical power generation are designed and compared according to solar collection area minimization. The one comprises the parabolic trough collector, dual-tank of molten salt heat ...

Thermodynamic analysis of a geothermal-solar flash-binary hybrid power generation system ... proposed geothermal-solar hybrid power generation system achieves favorable thermodynamic performances ...

Keywords: Solar energy, Power generation, Updraft, Solar chimney, Thermodynamic analysis, Economic Analysis. 1. Introduction been introduced by researchers called -Solar Through the last decades, energy demand of the world has expanded constantly because of the speedy growth of the industries, mainly in developing nations.

Results from the thermal analysis of the hybrid system for each of the three selected working fluid shows that the system perform best with R123 as working fluid with maximum fuel efficiency of 40.4%; maximum

thermal efficiency of 13.5%; consumption of 0.936 kg rich husk to generate 1 kWh of energy for 50% sharing of solar-biomass (rice husk) during peak solar radiation ...

Web: https://www.mzanzipestcontrol.co.za