On October 16, Liangshan Lizhou Hydropower Station"s "hydro-photovoltaic hybrid" project, a key component of Sichuan Province"s "14th Five-Year" renewable energy development plan, ...

However, photovoltaic power generation is highly weather-dependent, relying mostly on solar irradiation that is highly unstable, and unpredictable which makes power generation challenging. Accurate photovoltaic power predictions can substantially improve the operation of solar power systems.

Exploiting advanced light-absorbing conjugated polymers is of great significance to achieve the blue dream of low-energy solar steam generation and clean water collection. Herein, an interfacial chemistry strategy is developed to massively synthetize conjugated polybenzobisthiazole (CP) microspheres with a narrow bandgap of 0.274 eV and high solar ...

Simulation results show that GA-BP and PSO-BP network forecasting models both obtain high prediction accuracy, which indicates GA andPSO methods can effectively reduce the prediction errors in contrast to the original BP model. With the improvement in the integration of solar power generation, photovoltaic (PV) power forecasting plays a significant role in ...

The hybrid solar-wind systems are becoming popular in remote area power generation applications due to advancements in renewable energy technologies and substantial rise in prices of petroleum products. ... Zhou & Chengzhi, Lou, 2009. "Optimal design and techno-economic analysis of a hybrid solar-wind power generation system," Applied Energy ...

The regulation capacity of concentrating solar power (CSP)plants can rival that of conventional thermal units. CSP plants can participate in peak load and frequency regulations timely and deeply, which improves the flexibility of the power system. Thus,CSP is a promising renewable energy generation technology.

How to improve the conversion efficiency and power generation of solar photovoltaic has always been a focus issue. However, more attention is paid to the impact of photovoltaic panel working temperature on the performance of photovoltaic power generation, and how air temperature affects photovoltaic power generation has been ignored.

Photovoltaic (PV) power is a renewable, clean, and flexible distributed energy resource that could play an important role in satisfying the increasing worldwide demand for clean energy [1].PV power has gained increasing attention in the past few decades [2], [3]; the integration of PV power has brought significant economic and environmental benefits.

Energy and water are two of the most threatening global challenges for human society. The solar thermal

utilization for water and/or power generation is regarded as a promising roadmap toward renewable energy-water nexus, which has garnered revived interest due to the emerging development of interfacial solar vapor generation (ISVG).

DOI: 10.1039/D0EE02730H Corpus ID: 233939511; Solar-driven ionic power generation via a film of nanocellulose @ conductive metal-organic framework @article{Zhou2021SolardrivenIP, title={Solar-driven ionic power generation via a film of nanocellulose @ conductive metal-organic framework}, author={Shengyang Zhou and Zhen ...

Solar powered steam generation is an emerging area in the field of energy harvest and sustainable technologies. The nano-structured photothermal materials are able to harvest energy from the full solar spectrum and convert it to heat with high efficiency. Moreover, the materials and structures for heat management as well as the mass transportation are also ...

The power generation measurement used the solar vapor evaporation device to supplement wind energy and other modules to simulate marine environment (21.4 °C, 15.8% RH, winter, in Harbin, China).

The maximum daily power generation in different seasons basically presents at 12:00. The power generation at 12:00 in the winter is the largest in February 2020 (5021 kW h), and the minimum in January 2020 (2426 kW h). The largest power generation at 12:00 in the spring is April 2020 (5744 kW h), and the smallest one is May 2020 (4672 kW h).

A particularly promising enhancement would involve integrating coolant pipelines into the system, which could facilitate the utilization of cooling power and waste heat from the solar panel in next-generation heating, ventilation, and air-conditioning systems; this could reduce the energy requirements for air conditioning and water heating in residential ...

The stand-alone hybrid solar-wind power generation system is recognized as a viable alternative to grid supply or conventional fuel-based remote area power supplies all over the world. It is generally more suitable than systems that only have one energy source for supply of electricity to off-grid applications. However, the design, control ...

Solar-driven interfacial water evaporation, which concentrates solar heating at the water surface, has attracted increasing interest in pursuing highly efficient solar desalination. The rapid evaporation of water at the light absorber surface would induce a high concentration comparable with that of brine un 2017 Energy and Environmental Science HOT articles

The presence of ions is crucial for the power generation, and previous studies often involved using salt solutions to enhance the electricity generation [8, 50, 51]. In this study, the common electrolyte of NaCl was selected to investigate its ...

Moreover, the system can efficiently achieve solar-to-thermal conversion to raise the temperature difference, accompanied by a stable open circuit voltage of 6.4 V for the hydrovoltaic generator ...

DOI: 10.1016/J.JOULE.2018.04.004 Corpus ID: 139792563; Enhancement of Interfacial Solar Vapor Generation by Environmental Energy @article{Li2018EnhancementOI, title={Enhancement of Interfacial Solar Vapor Generation by Environmental Energy}, author={Xiuqiang Li and Jinlei Li and Jin-You Lu and Ning Xu and Chuanlu Chen and Xinzhe Min and Bin Zhu and Hongxia Li ...

Current status of research on optimum sizing of stand-alone hybrid solar-wind power generation systems. / Zhou, Wei; Lou, Chengzhi; Li, Zhongshi et al. In: Applied Energy, Vol. 87, No. 2, 01.01.2010, p. 380-389. Research output: Journal article publication > Journal article > Academic research > peer-review.

Solar and wind energy systems are omnipresent, freely available, environmental friendly, and they are considered as promising power generating sources due to their availability and topological advantages for local power generations. Hybrid solar-wind energy systems, uses two renewable energy sources, allow improving the system efficiency and power reliability and reduce the ...

DOI: 10.1016/J.ENCONMAN.2018.06.001 Corpus ID: 103559665; Optimal daily generation scheduling of large hydro-photovoltaic hybrid power plants @article{Ming2018OptimalDG, title={Optimal daily generation scheduling of large hydro-photovoltaic hybrid power plants}, author={Bo Ming and Pan Liu and Lei Cheng and Yanlai Zhou and Xianxun Wang}, ...

The development of renewable energy is important for climate change mitigation and socioeconomic sustainability, and the prediction of renewable energy potential (e.g., solar) under the consideration of climate change impact is challenged. In this study, a factorial-analysis-based random forest (FARF) method is developed for the distributed solar power generation ...

DOI: 10.1016/j.apenergy.2020.115992 Corpus ID: 225125301; Review of wind power scenario generation methods for optimal operation of renewable energy systems @article{Li2020ReviewOW, title={Review of wind power scenario generation methods for optimal operation of renewable energy systems}, author={Jinghua Li and Jiasheng Zhou and Bo ...

Based on Genetic Algorithms, one pilot hybrid solar-wind power generation project designed by Yang et al. was built to supply power for a telecommunication relay station from renewable energy sources on a remote island (Dalajia Island) along the south-east coast of China [1], [4].The electric use for the normal operation of the telecommunication station ...

The evaporation process at the "air-water" interface is a potential driving force for power generation, and SDIE co-generation is driven by solar energy, the light absorbing layer in PMs captures the heat from the solar energy, and the water body is influenced by the evaporation force at the solar interface, which causes intense local motion in the PMs and ...

However, solar power technology is intermittent and fluctuating. There is always a mismatch between peak power generation and consumer demand, resulting in the "duck curve" problem in the solar power plants (Wang et al., 2023).To alleviate this problem, researchers integrate energy storage and solar power technologies to overcome the disadvantages of poor ...

The power generation performance of EFDG induced by EDL is influenced by both capillary water transport rate and ion concentration [19]. In the NaCl solution with a mass concentration of 10 %, the power generation performance of EFDG is higher and gradually increases over time.

Current status of research on optimum sizing of stand-alone hybrid solar-wind power generation systems. Wei Zhou, Chengzhi Lou, Zhongshi Li, Lin Lu and Hongxing Yang. Applied Energy, 2010, vol. 87, issue 2, 380-389 . Abstract: Solar and wind energy systems are omnipresent, freely available, environmental friendly, and they are considered as promising power generating ...

[1] Liwen Zhang, Juwei Zhang, Wei Tian and Xiaohong Zhang 2016 Solar photovoltaic power generation technology and its application [J] Applied Energy Technology 4-8 Google Scholar [2] Chaofan Li 2015 Analysis and design of off-grid photovoltaic power generation system [D] (Chang"an University) Google Scholar [3] Fubao Wu and Xiangyan Wang 2017 ...

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