
Cost Analysis of Solar Containerized Air Conditioning

Does a solar-assisted air conditioning system save energy?

The existing vapour-compression air conditioning system operating alone consumes more energy compared to that when supplemented with the solar-driven absorption chiller with AES. A maximum of 58% energy-saving is achieved from the integrated solar-assisted cooling system in July and August.

Can solar energy be used in building air-conditioning systems?

Singh and Das [23 - 26] investigated the potential application and operational strategies of solar energy in the field of building air-conditioning systems, the findings revealed that the incorporation of solar energy can substantially decrease the energy consumption of air-conditioning systems while enhancing their economic viability.

How much energy-saving is achieved from integrated solar-assisted cooling system?

A maximum of 58% energy-saving is achieved from the integrated solar-assisted cooling system in July and August. Furthermore, a solar fraction of 63% is obtained from the integrated solar cooling system.

Finally, the annual levelized cost of energy-savings of about 137,944 USD is achieved from the proposed cooling system.

1. Introduction

What is a solar-assisted cooling system?

The solar-assisted cooling system refers to a system consisting of conventional vapour compression air conditioning and solar-driven absorption cooling systems. In this case, the conventional system is operated for a shorter period due to the contribution of the solar-driven absorption system.

A Case Study of Thermal Analysis of a Solar Assisted Absorption Air-Conditioning System Using R-410 for Domestic Applications, Case Studies in Thermal Engineering, ...

Performance Analysis of Solar-Integrated Vapour Compression Air Conditioning System for Multi-Story Residential Buildings in Hot Climates: Energy, Exergy, Economic, and ...

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The most important variables impacting the viability of the integration between air-conditioning and solar photovoltaic systems are energy price, energy price annual adjustment, ...

Thermo-Economic Comparisons of Environmentally Friendly Solar Assisted Absorption Air Conditioning Systems March 2021 Applied ...

Designing new systems is needed to meet the increasing communities' demands of space cooling. This should be given more attention especially with the increasing conventional fossil ...

Energy, exergy, and cost analysis of solar powered desiccant air conditioning system Department of Mechanical Engineering, Sardar Vallabhbhai National Institute of ...

In the present work, solar powered desiccant air conditioning system (SPDAC) is operated for two different modes (a) cooling & dehumidification (b) heating & humidification ...

A comprehensive Techno-Economic Analysis (TEA) methodology was employed in this study. Simulation tools such as PV*SOL were used for the PV system design, and ...

Thermo-Economic Comparisons of Environmentally Friendly Solar Assisted Absorption Air Conditioning Systems March 2021 Applied Sciences 11 (5):2442 DOI: ...

Solar energy might be used for air conditioning (cooling systems) in two methods; photovoltaic solar cooling (conventional air conditioned based) and heat driven sorption ...

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