Espay Solar Energy S.L.

Cost-effectiveness of solar energy storage cabinets used in oil refineries

Overview

This paper proposes a solar-assisted method for a petrochemical refinery, considering hydrogen production deployed in Yanbu, Saudi Arabia, as a case study to greenize oil refineries. Solar energy has emerged as a game-changing cost-reduction tool for oil and gas operations, with 2023 marking the first year where global investment in solar power is expected to surpass oil production investment. Energy storage systems allow electricity to be stored—and then discharged at the most strategic times, allowing refineries to better insulate. This study describes techno-economic analysis of opportunities for distributed energy resources that could be integrated to support oil and gas companies' economic, environmental, and energy resiliency goals. A validated ASPEN HYSYS model was used to investigate the products produced from heavy crude oil in the refinery. Specifically, the analysis evaluates solar photovoltaics, wind turbines, battery energy.

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How Battery Storage Can Help Refineries Manage Rising Energy ...

On-site renewables, like battery storage and solar-plus-storage, can play a strategic role in mitigating the impact of rising energy costs and hedging against future price fluctuations--all ...

Analysis of a Solar-Assisted Crude Oil Refinery System

Employing solar energy to drive crude oil refineries is one of the investigated pathways for using renewable energy sources to support lowering the carbon emissions and environmental impact of ...

Analysis of a Solar-Assisted Crude Oil Refinery System

This paper proposes a solar-assisted method for a petrochemical refinery, considering hydrogen production deployed in Yanbu, Saudi Arabia, as a case study to greenize oil refineries.

Distributed clean energy

opportunities for US oil refinery

Section 3.1 describes how electricity generation technologies--solar PV, wind, and battery energy storage, which were co-optimized due to the temporal nature of solar and wind resource--can ...

Solar-assisted hybrid oil heating system for heavy refinery ...

Using TRNSYS software, the proposed Parabolic Trough Collector (PTC)-based solar heating system paired with the boiler is modelled. Sensible thermal energy storage (TES) system is integrated into ...

Solar-assisted hybrid oil heating system for heavy refinery products

The present study investigates the feasibility of solar hybrid system to generate steam in the oil refinery to maintain the temperature of heavy crude oil products before despatching from ...

Analysis and assessment of using an integrated solar energy based

In large crude oil refineries, keeping emission levels low and minimizing

energy losses can primarily be controlled by performing thermo-economic and environmental analyses. The oil refining ...

Frontiers , Distributed clean energy opportunities for US oil refinery

Results indicate that the associated costs of emissions reductions via several distributed clean energy technologies are competitive with other emissions reduction strategies such as energy ...

How Solar Energy is Revolutionizing Oil and Gas ...

For refineries, where energy costs can constitute 30-50% of operating expenses, solar integration presents a compelling business case.

Solar-assisted hybrid oil heating system for heavy refinery product storage

The purpose of this study is to investigate the potential use of solar energy within an oil refinery to reduce its

fossil fuel consumption and greenhouse gas emissions.

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