

Can solar energy drive crude oil refineries?

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 operating the processing of fossil-based fuels.

Can solar energy systems decarbonize oil refineries?

Other studies in the literature considered coupling solar energy systems to oil refineries to decarbonize their operation. The applicability and feasibility of introducing a concentrated solar power (CSP) system to reduce partial reliance on process heaters of a crude oil refinery was studied by Danish et al. .

Can a TRNSYS solar heating system be used in a 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 the refinery's process heating to handle the intermittent nature of solar energy.

How efficient is solar energy in crude oil heating?

The thermodynamic analyses described earlier is utilized to assess the system performance. The energy and exergy efficiencies of the system are found to be 60.94% and 19.34%, respectively. Furthermore, for a 10% solar share in crude oil heating, 11,950 tons of CO₂ emission are avoided per year.

In addition, solar-powered reverse osmosis systems are designed for noise-free and energy-efficient operation. Industries can benefit from clean energy without the negative ...

In large crude oil refineries, keeping emission levels low and minimizing energy losses can primarily be controlled by performing thermo-economic and environmental ...

The global market for containerized solar solutions is expanding, driven by both public and private sector investment. Government tenders for rural electrification, rising ...

In an unusual merger of renewable energy and fossil fuels, solar energy is being tapped to power an existing oil refinery. The Rodeo, ...

With the growing urge to decarbonize the energy sector, actions toward reducing emissions of the oil and gas sector can contribute to bringing large cuts to carbon emissions. ...

The goal of this research is to study the technical and economic feasibility of the integration of photovoltaic solar power systems in two of the biggest Iraqi oil refineries: ...

Indeed, the integration of low-emission hydrogen production directly within refineries presents a cost-effective opportunity that leverages existing infrastructure to accelerate the ...

Concentrated Solar Thermal offers a pathway to decarbonising oil refining by replacing fossil-fuelled steam with solar-powered alternatives.

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 ...

It was published on Energy under the title "Concentrated solar heat for the decarbonization of industrial chemical processes: a case ...

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This solar mobile containerized reverse osmosis water system was ordered by a customer from Mozambique, who hoped to solve the ...

Specifically, the analysis evaluates solar photovoltaics, wind turbines, battery energy storage, landfill gas, biomass, municipal solid ...

The chemical industry is making significant investments in clean energy technologies, such as green hydrogen, carbon capture and storage, electric heating, and ...

NEWater specializes in the design and manufacture of solar-powered water purifiers, portable filtration systems, seawater desalination equipment, ...

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