

**EQACC SOLAR**

# **Off-grid solar-powered containerized oil refinery in Nuku alofa refinery**



## Overview

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There is an urgent need to shift away from the present heavy dependence on fossil fuels and embrace renewable energy sources, particularly in the context of the energy-intensive oil refining process. Built on.

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 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-assisted petrochemical refineries greenize oil refineries?

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.

Can solar catalytic chemical looping Biomass Refinery produce high purity hydrogen?

A techno-economic analysis of solar catalytic chemical looping biomass refinery for sustainable production of high purity hydrogen. Energy Convers. Manage. 243, 114341 (2021) Mohammed, S.A.; Al-Azawiey, S.S.; Ali, A.H.: Treatment of organic compounds resulting from oil refineries under solar light and reuse it for industrial purpose.

## Off-grid solar-powered containerized oil refinery in Nuku alofa refin

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### Solar Refinery

On an industrial scale, one can visualize a solar refinery (see Figure 1) that converts readily available sources of carbon and hydrogen, in the form of CO<sub>2</sub> and water, to ...



### Solar oil refinery: Solar-driven hybrid chemical cracking of ...

The solar multi-energies-driven hybrid chemical oil refining system has been formulated for solar-driven hybrid chemical cracking of residual oil (solar oil cracking) towards ...



### From challenge to opportunity: Enhancing oil refinery plants ...

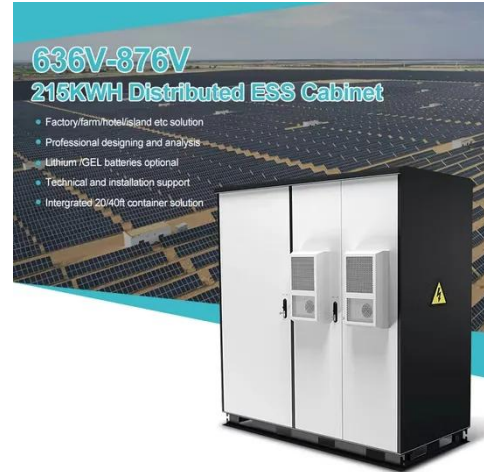
The research conducted a comprehensive techno-economic analysis and optimal design of a hybrid renewable energy system (HRES) integrated with grid connection, utilizing a ...



### Concentrated solar power

## integration with refinery process ...

Crude oil heating is considered an energy-intensive process in the oil industry that requires a huge amount of heat to process the crude oil. There is scarcity of a thorough ...



**INTEGRATED DESIGN**  
EASY TO TRANSPORT AND INSTALL,  
FLEXIBLE DEPLOYMENT



## Published at Energy Conversion and management

Abstract: Built on the Solar Reactive Utilization framework, this study presents an innovative concept called the Solar Oil Refinery, applying solar energy in the energy ...

## Solar Refinery

On an industrial scale, one can visualize a solar refinery (see Figure 1) that converts readily available sources of carbon and hydrogen, ...



## Analysis of a Solar-Assisted Crude Oil Refinery System

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. ...



## Making fuel from sunlight and air

A solar mini-refinery captures carbon and solar power to create a CO<sub>2</sub>-neutral alternative to fossil fuel. There is no single cure-all to climate change. Instead a number of ...



## Solar oil refinery: Solar-driven hybrid chemical cracking of ...

This includes the framework and outline of the solar reactive utilization, model and construction of the solar-driven hybrid chemical cracking oil system, cyclic voltammetry ...

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

Conclusion 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 ...



### **Making fuel from sunlight and air**

A solar mini-refinery captures carbon and solar power to create a CO<sub>2</sub>-neutral alternative to fossil fuel. There is no single cure-all ...

### **Solar Refinery**

The result is a general framework that will allow scientists and engineers to evaluate how various improvements in materials' manufacturing and processing technologies that ...



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