Cost Analysis of Outdoor Grid-Connected Units for Oil Refineries

We modeled needed refinery capacity in three scenarios: a slow, medium, and fast transition to alternative sources of energy. They all show big drops in refining capacity over the next ten years.

To address these research gaps collectively, this work aims to develop a multi-period MILP optimisation model to optimise the total cost of a renewable energy system while meeting the energy demands of an oil refinery.

Physical Interconnection: In this case study, the producing oil field is connected to the electrical grid at an existing substation. The challenge is to find the most efficient and cost-effective way to connect the solar farm.

Utility demands have been calculated for each unit/area and for the refineries overall, allowing later phases to measure the specific impacts of electrification.

This paper reviews the fundamentals of the Exergy Cost Theory, an energy cost accounting methodology to evaluate the physical costs of products of energy systems and their associated waste.

The analysis is part of a collaborative program with industry to understand site-specific energy consumption and prices in the oil and gas supply chain and determine under what conditions clean energy options are ...

581 Table 4. Summary of WTW decarbonization cost for U.S. refineries (in $) achieved by combining all 582 approaches: electricity switching, steam switching, H2 switching, CCS, and crude switching to biocrude 583 ...

The findings suggest that, given available resources and technology, there are opportunities to reduce energy consumption cost-effectively in the petroleum refining industry while maintaining the quality of ...

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

These case study locations were selected based on a national screening of average industrial electricity costs and considering common refinery locations, local renewable resources, and regional grid ...

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