Sustainable power systems CuraÃ§ao

Does Curaçao have a potential for wind energy storage?
In this study,Curaçao is selected as the prototypical location for tropical SIDS. This island has significant potentialfor wind energy,and already has 30 MW of installed capacity [5]. In this analysis,the storage capacity for short-term and seasonal energy storage was estimated (Section 1 of the Supporting Information - SI).

Is green ammonia energy storage feasible in Curaçao (Caribbean SIDS)?
Green ammonia seasonal energy storage is feasiblein Curaçao (Caribbean SIDS). Absorption Enhanced Haber-Bosch using Ru-catalysts results in a LCOE of 0.13 USD/kWh. Wind energy combined with ammonia energy storage leads to a carbon footprint of just 0.03 kg CO 2 /kWh.

How much energy does Curaçao need?
Peak demand for Curaçao is estimated to be 164 MW,based upon consumption [50],corrected for energy consumption increases in recent years [62]. Synergy between N 2 production,NH 3 production,and NH 3 power generation has been assessed by Aziz et al. [63],resulting in a reduced energy consumption of N 2 production.

What is the peak energy demand for Curaçao?
Sufficient SOFC-H capacity was considered in the design to handle the peak demand. That is when no direct wind energy or battolyser energy storage is available. Peak demand for Curaçao is estimated to be 164 MW,based upon consumption [50],corrected for energy consumption increases in recent years [62].

How much does coal cost in Curaçao?
The coal price was estimated in the range of 42.7-96.5 USD ton -1,based on shipping tariffs from Puerto Bolivar to Curaçao [68]and current spot prices [69]. For the natural gas power plant,LNG (liquefied natural gas) spot prices are taken at 8-13 USD MMBtu -1 (8.44-13.72 USD Gj -1) based upon current trends [70].

The Battery Energy Storage System will contribute to a reduction of power outages on the island and optimizes the use of renewable energy and thereby lowers greenhouse gas emissions. This system also brings us a myriad of economic benefits, such as a cutback in peak demand charges and low electricity bills for consumers and businesses in Curaçao.

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Who We Are. Dynaf Group is the Caribbean"s premier power solutions provider. With a presence on multiple islands, we offer comprehensive energy services, from traditional generators to cutting-edge renewable technologies, backed by our commitment to lifetime maintenance and round-the-clock support.

Fig. 2. Operation modes of islanded green ammonia powered system. From "Green ammonia enables sustainable energy production in small island developing states: A case study on the island of Curaçao", Renewable and Sustainable Energy Reviews, June 2022.

Earlier this year, Aqualectra placed an order with Wärtsilä for a Battery Energy Storage System (BESS), as well as Wärtsilä"s GEMS Digital Energy Platform. The combined system will enable the expansion of renewable energy capacity, representing an important step towards a sustainable energy future for the island.

This latest order is for a new 38.4 MW power plant that will be capable of providing efficient grid balancing as the level of renewable energy in the system continues to increase. The order was booked by Wärtsilä in Q3 2024. The new Salu Power Plant is being supplied on a full engineering, procurement and construction (EPC) basis.

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The mining site, now boasting a daily gold capacity of 24,000 tons, has integrated a 34 MW photovoltaic (PV) solar plant and an 18 MW battery system, contributing 20% of the facility"s power needs. ABB"s technology is ...

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Wärtsilä has been contracted by Aqualectra, Cura?ao"s government owned utilities company, to provide engineering, procurement and construction (EPC) in support of the country"s decarbonization program. This latest order is for a new 38.4 MW power plant that will be capable of providing efficient grid balancing as the level of renewable energy in the system ...

Aqualectra and Wärtsilä partner on Battery Energy Storage System Willemstad, May 20, 2024 - Aqualectra and Wärtsilä have taken a significant step towards a sustainable energy future for Curaçao by the signing of a Battery Energy Storage System Agreement. As a part of Aqualectra"s ongoing efforts to continue improving its services and better serve the ...

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