

Average hybrid renewable storage price per 5kWh in Brazil

How much does it cost to store hydrogen in Brazil?

The CAPEX should cost less than USD 650/kWe to store hydrogen economically viable. It is more profitable trading hydrogen than transforming it back into power. The work aims to verify the economic feasibility of renewable hybrid systems for hydrogen production and storage in the Brazilian electric power sector.

Are hybrid solar systems feasible?

Several studies have demonstrated the feasibility of hybrid systems with combined solar PV, wind power, fuel cell, electrolyser, and hydrogen storage systems [,,,,,].

How much does a hybrid hydrogen tank cost?

Other premises for the hybrid system are the cost for a high-pressure steel tank at 30 bar, which is around USD 300/Kg and operating costs are estimated at 1.5% of initial CAPEX, having a lifetime of 20 years. Also, it was adopted that the tank size is proportional to the electrolyser hydrogen capacity in kg of hydrogen during 15 h.

What is a wind and solar PV hybrid system?

The schematic of the wind and solar PV hybrid system for hydrogen production and storage, proposed in Fig. 1, consists of electricity supply (wind or solar PV), electrolyser, hydrogen storage tank for a long time energy storage, fuel cell and a power inverter (Direct Current (DC)/Alternating Current (AC)).

Is hydrogen production possible through a renewable hybrid system?

Some studies, for example, already have demonstrated the feasibility of a levelized cost of hydrogen production through a renewable hybrid system [, ,]. An offshore wind hybrid system associated with hydrogen production only, given 10% curtailment, has shown a levelized cost of hydrogen of EUR 3.77/kg.

How much does green hydrogen cost?

In the case of the production of green hydrogen, the costs are between USD 2.50-6.80/kg, while the current price of grey hydrogen production at USD 1-1.80/kg and blue hydrogen at USD 1.40-2.40/kg [3,7,20]. The most attractive production markets for green hydrogen are those with abundant and low-cost renewable resources [21,22].



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