

Total investment cost of solar diesel hybrid storage project in Iran

Can PV/wind/diesel hybrid power system reduce the cost of energy?

The results showed that around 75% could decrease the cost of energy by using PV/wind/diesel hybrid power system.

What is a hybrid energy system?

In a hybrid energy system, different energy sources (photovoltaic (PV), wind, diesel, etc.) as well as energy storage devices are connected together to supply the electrical load.

Can a wind/photovoltaic/battery/diesel hybrid system work in Iran?

In this paper, a wind/photovoltaic/battery/diesel hybrid system with hourly analysis during a year is modeled and optimized for different cities of Iran with various ranges of wind, solar and ambient temperature. A number of solar panels, wind turbines, batteries as well as nominal capacity of diesel engine are considered as design parameters.

Why is diesel engine a good source of energy in Iran?

For more flexibility, diesel engine is also considered as a source of energy conversion and whole system is optimized with hourly analysis during a year for different cities of Iran with various ranges of wind, solar and ambient temperature including Tabriz, Tehran, Zahedan, Mashhad, Kerman and Bushehr.

How much does a hybrid power system cost?

The LCOE (levelized cost of electricity) of generated electricity by this hybrid system (\$0.25/kWh) was about 20% cheaper than that with a diesel engine as backup (\$0.31/kWh), while the capital cost and the total NPC (net present cost) were about 30% and 18% lower, respectively.

How to optimize a hybrid wind solar photovoltaic system?

There are different schemes to optimize a hybrid wind solar photovoltaic system: multi-objective or mono-objective optimization problem; grid-connected or stand-alone system; economics, reliability or environmental indicators; solution methodologies and solving techniques.



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