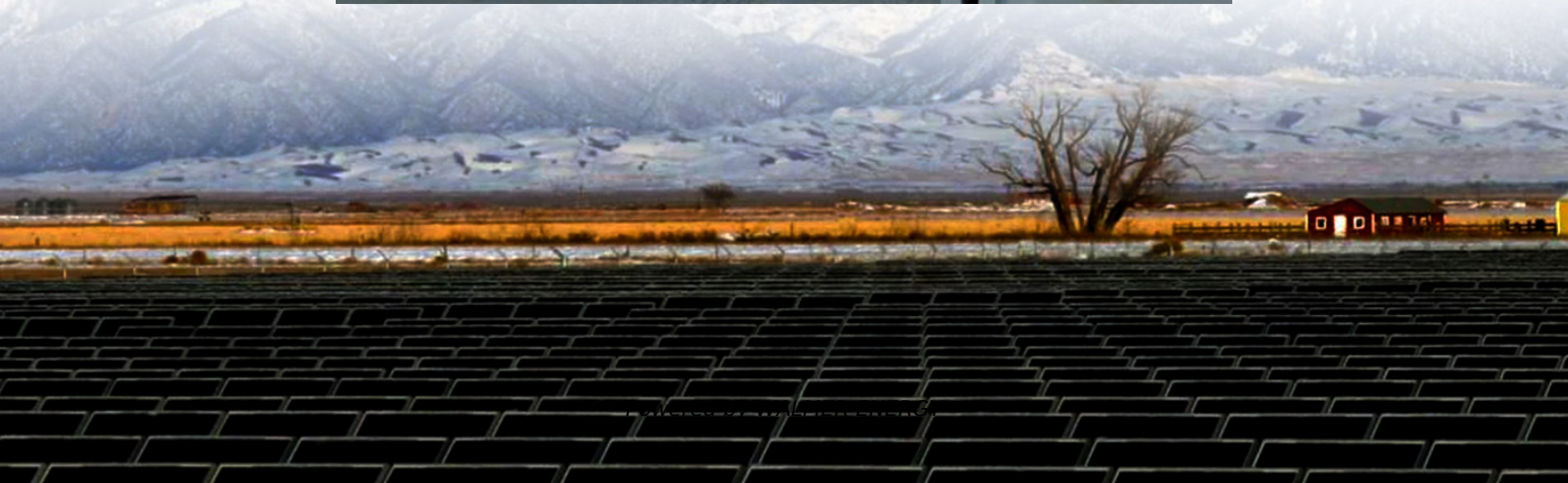


Fast charging of photovoltaic energy storage containers for power stations





Overview

Why do we need ultra-fast charging stations?

The installation of ultra-fast charging stations (UFCSS) is essential to push the adoption of electric vehicles (EVs). Given the high amount of power required b.

How does a PV system work?

The PV system generates power to fulfill the station's charging demands partially/fully and either export the excess energy to the PDN or charge the BESS. During the weekend, the PV system generation coincides with the XFCS demand, therefore the majority of the time it is being utilized to feed the charging station demands.

Are PV systems economically viable in xfcs?

Thus, it demonstrates that the installation of the PV system in the studied XFCS is economically viable in both cases because it serves multiple purposes by directly feeding the charging station demand, charging the BESS, and exporting the excess generated power to the PDN to earn extra revenue (see Fig. 9 (b) and (f)).

Is there a multi-objective optimization problem for photovoltaic system and battery ESS?

Therefore, this paper proposes a multi-objective optimization problem for the optimal sizing of photovoltaic (PV) system and battery ESS (BESS) in a UFCS of EVs. The proposed multi-objective function aims to minimize, on one side, the annualized cost of the station, and on the other side, the produced pollutant emissions.



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