

- The present paper presents a deep study on the possibility of implementing Concentrated Solar Power (CSP) plants in Algeria for the production of the electrical energy. Indeed, this paper focusses mainly on the main parameters, which can have an important impact on the choice of the location, the dimension and the available thermal energy storage system. In this study, three main parameters are investigated such as the solar Multiple (SM), the thermal energy Storage (TES) capacity and the Capacity Factor (CF), where the main challenge is to find their optimal values based on the available solar energy deposit and the different constraints of the four considered regions of Algeria presented in this paper. These optimal values will be used in the implementation and the management of the considered CSP to ensure the maximal probability of the location in terms of balance between the production and the demand of energy. This paper benefits from the onsite real data and the satellite data for finding the optimal values of the aforementioned parameters, where it has been proved that the satellite data can ensure more precise profitability of the available solar energy to ensure more produced electrical power. The obtained results allow to obtain optimized configuration of the implemented CSP and demonstrate that the use of such solar power plant can be of great interest to ensure more times production of the national electrical energy demand, especially in the large Sahar of Algeria which can power several parts of the world and neighbour countries.
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