Kongres Container

Double container solar constant temperature system debugging

Overview

How much thermal energy can a solar energy storage system store?

At nominal conditions, the storage system can store about 15 MWh of thermal energy, accumulating around 195 tons of thermal oil (“Therminol SP-I”). The latter flows through the solar field as HTF and serves equally as storage medium in TES tanks.

How does a solar energy storage system work?

At present, this solar facility integrates as a vital sub-system, a two-tank direct TES unit for accumulating the solar thermal energy produced in the solar field. At nominal conditions, the storage system can store about 15 MWh of thermal energy, accumulating around 195 tons of thermal oil (“Therminol SP-I”).

How does a two-tank direct TES case improve solar energy production?

The existing two-tank direct TES case overcomes the instability of the thermal power generated by the solar field. The presence of this TES device raises the ORC mean yearly efficiency up to a value of 19.7% and the ORC electrical energy production up to 0.92 GWh per year.

What is low concentrating solar photovoltaic thermal (pv / T) system?

Low-concentrating solar photovoltaic thermal (PV / T) system combines the solar cell module with a solar collector which is aimed at converting solar energy into both electricity and thermal energy. It can make good use of diffuse radiation and performs well under lower solar radiation.

Can a TES system improve a solar facility?

With the view of improving the solar facility, two alternative TES configurations were proposed in this study: a one-tank packed-bed TES system using silica as solid storage media and another similar one including encapsulated phase-change material (molten salt).

What happens if the solar field is deactivated?

In fact, the solar field is unable to guarantee the thermal power requested by the ORC unit and the storage system is therefore discharged to make up the energy deficit, as shown in Figure 3C. This operating condition remains active up to about 5 pm, when the solar field is deactivated and only the TES system supplies the ORC plant (TES-to-ORC).

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