

Solar container storage capacity of energy storage charging pile





Overview

Energy storage needs to account for the intermittence of solar radiation if solar energy is to be used to answer the heat demands of buildings. Energy piles, which embed thermal loops into the pile body, ha.

How much energy is stored per unit pile?

Quantitatively, the daily average rate of energy storage per unit pile length reaches about 200 W/m for the case in saturated soil with turbulent flowrate and high-level radiation. This is almost 4 times that in the dry soil. Under low-level radiation, it is about 60 W/m.

Can energy piles store solar thermal energy underground?

Ma and Wang proposed using energy piles to store solar thermal energy underground in summer, which can be retrieved later to meet the heat demands in winter, as schematically illustrated in Fig. 1. A mathematical model of the coupled energy pile-solar collector system was developed, and a parametric study was carried out.

What is the maximum temperature of a solar energy pile?

It indicates that both the inlet and outlet temperature of the energy pile undergo a rapid increase during the first hour. Then they increase quite slowly as the underground storage of solar thermal energy continues. The maximum inlet temperature is about 60 °C.

How many cycles of energy storage are maintained in a pile-soil system?

In addition, the model domain of the energy pile-soil system has limited dimensions and thus only five cycles of energy storage were maintained for each test. These factors affect the results quantitatively, while they should not invalidate the fair comparison between different tests.



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