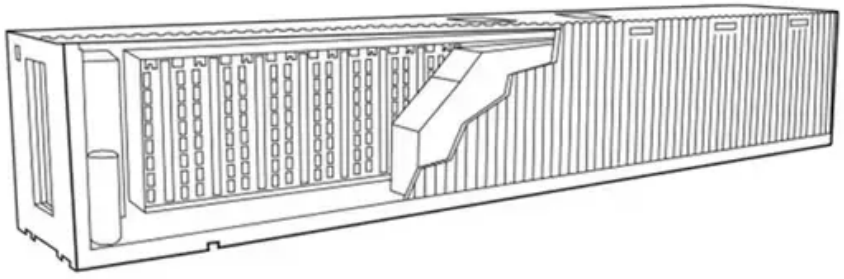
Kongres Container

Norwegian high temperature solar system design



Overview

Is a thermal barrier economically viable in Norway?

The thermal barrier increases the amount of stored thermal energy after the first three years of operation by 20 %. The cost of the barrier is still too high to make it economically viable in Norway. 1. Introduction Borehole Thermal Energy Storages (BTESs) are seasonal storages for thermal energy.

What is a high temperature underground thermal energy storage?

High temperature underground thermal energy storages are defined by temperatures of 25 to 90 °C (Kallesøe and Vangkilde-Pedersen, 2019). These may deliver heat without heat pumps if the heat supply system is designed for the available temperature level.

Can high temperature borehole thermal energy storage help green cities?

High temperature borehole thermal energy storages (HT-BTESs) have a huge potential in enabling green cities by storing and supplying a large share of the required heating/cooling demand in buildings and industry. A new concept to minimize losses is the use of a thermal barrier ring of boreholes around the inner boreholes.

Can HT-BTES cover Fjell primary school's heat demand?

Despite any groundwater flow, measurements show that the HT-BTES has reached about 30–45 °C in its core and can cover most of Fjell Primary School's heat demand as planned. It was assured that the model has converged, has sufficient distance to its borders and matches measurements and TRNSYS results.

What is high temperature borehole thermal energy storage (HT-BTES)?

Distributed temperature sensing measurements from high temperature borehole thermal energy storage (HT-BTES) are presented. Thermal losses from HT-BTES are found as function of loss mechanism and time. The HT-BTES

is a more economic alternative than the traditional low temperature BTES.

Is Norwegian electricity cheap in Europe?

Norwegian electricity is comparably cheap in Europe, and in countries where winter prices of 3.21–4.4 kNOK/MWh (277–379 EUR/MWh) is usual, the barrier would become economical. A way to enhance the barrier's value would be to utilize it for charging the inner rings and reduce the losses as demonstrated in other works (Ahmadfard et al., 2019).

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