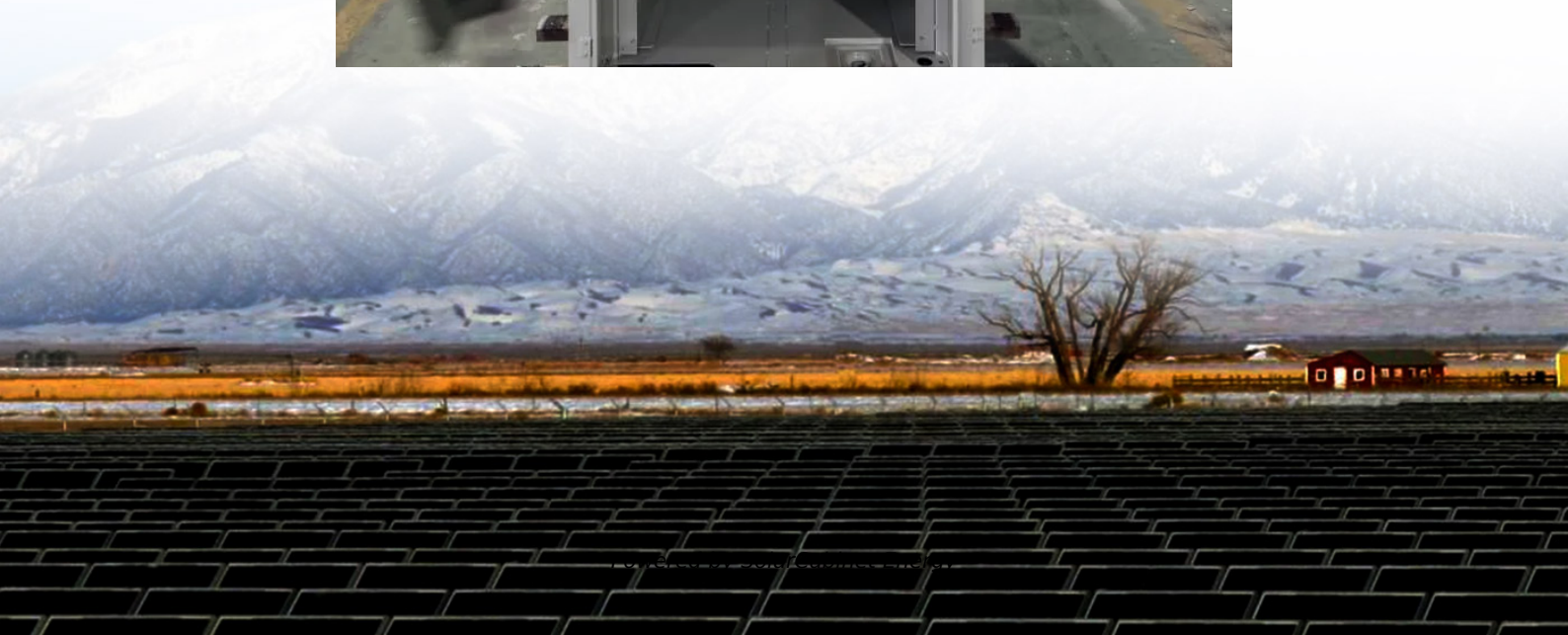


Energy storage container water cooling design





Overview

Which cooling system is a good application for thermal ice storage?

Any chilled water cooling system may be a good application for thermal ice storage. The system operation and components are similar to a conventional chilled water system. The main difference is that thermal ice storage systems are designed with the ability to manage energy use based on the time-of-day rather than the cooling requirements.

What construction materials are used for ice storage containers?

Common construction materials are reinforced concrete and steel. Location: Ice storage containers may be located totally below grade, partially buried or completely above grade. They can be designed as an integral part of the cooling plant or placed in a remote location.

What is a glycol fluid / chilled water heat exchanger?

A glycol fluid / chilled water heat exchanger will be used to separate the glycol and chilled water loops. The system will be a partial ice storage system. The design day cooling load profile has a cooling peak of 10,500 kW and a night cooling load of 11,000 kW to 1800 kW.

Why should civil and structural engineers be involved in storage container design?

Civil and structural engineers should be involved in all storage container locations and designs. Waterproofing is an important part of the storage container design. All construction joints and pipe penetrations must be sealed to withstand the hydraulic pressure of the water. While steel surfaces are waterproof, concrete surfaces may be porous.

What is thermal energy storage?

Thermal Energy Storage (TES) is the term used to refer to energy storage that is based on a change in temperature. TES can be hot water or cold water



storage where conventional energies, such as natural gas, oil, electricity, etc. are used (when the demand for these energies is low) to either heat or cool the storage water.

What is a distribution cooling pipe?

The distribution cooling pipes are typically sized for a delta-T of 20°F (11.1°C). This reduces the chilled water flow volume, thus enabling the use of smaller pipes and pumps. The ice storage provides the energy management ability to shift energy use to lower cost periods of time.



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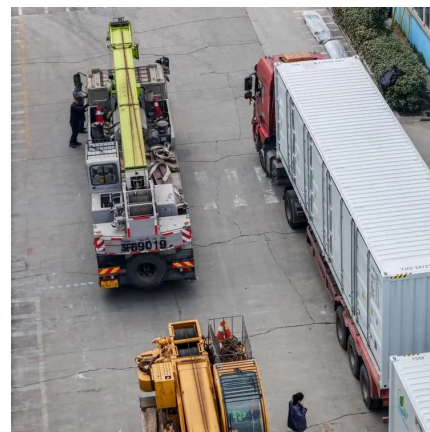


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