Overseas agent aquifer energy storage

What is aquifer thermal energy storage?
Aquifer Thermal Energy Storage (ATES) is considered to bridge the gap between periods of highest energy demand and highest energy supply. The objective of this study therefore is to review the global application status of ATES underpinned by operational statistics from existing projects.

Can aquifer thermal energy storage be used to plan Ates Wells?
These results are used to develop guidelines for planning of ATES wells. Aquifer thermal energy storage (ATES) is an energy efficient technique to provide heating and cooling to buildings by storage of warm and cold water in aquifers. In regions with large demand for ATES,ATES adoption has lead to congestion problems in aquifers.

What is sensible aquifer thermal energy storage (ATES)?
In open-loop systems,also referred to as Aquifer Thermal Energy Storage (ATES),sensible heat and cold is temporarily stored in the subsurface through injection and withdrawal of groundwater ,,. Fig. 1. Seasonal sensible UTES techniques.

How do ATES systems work in high groundwater flow aquifers?
In high groundwater flow aquifers densely occupied with ATES systems,lanes of warm and cold wells should be made in line with the groundwater flow direction. The performance of two ATES systems increases when their thermal zones are combined. Losses of thermal energy occur at the boundaries of the thermal zones.

Is high-temperature aquifer thermal energy storage sustainable?
A review within ECES Annex 12 of the International Energy Agency IEA. Giessener Geologische Schriften 67; 1999. Drijver B, van Aarssen M, Zwart B. de. High-temperature aquifer thermal energy storage (HT-ATES): sustainable and multi-usable. Innostock. In: Proceedings of the 12th international conference on energy storage, Lleida, Spain.

What is Ates aquifer?
ATES is an increasingly popular technique to supply thermal energy to buildings,with wide application for utility buildings. ATES is especially popular in the Netherlands,where the large number of systems (>3000) and limited available aquifer volume has lead to congestion problems in many urban areas (e.g.,Bloemendal et al. 2018).

Aquifer thermal energy storage (ATES) is a source of renewable energy that is extracted from the subsurface using the heat naturally present in the soil and groundwater. Storing heat and cold in the subsurface is a way of heating and ...

The concept of aquifer thermal energy storage involves injection of water at elevated temperature, and

possibly nonambient salinity, into a host aquifer. We consider axisymmetric injection, wherein both the composition ...

Aquifer thermal energy storage systems can largely contribute to climate-friendly heating and cooling of buildings: Heated water is stored in the underground and pumped up, if needed. ...

Aquifer thermal energy storage (ATES) systems offer reduced energy costs, lower carbon emissions, and increased energy resilience. The feasibility, however, depends on several ...

Being a heat source or sink, aquifers have been used to store large quantities of thermal energy to match cooling and heating supply and demand on both a short-term and long-term basis. The current technical, ...

Aquifer Thermal Energy Storage (ATES) uses excess thermal energy to heat water which is stored in an aquifer until it is needed, at which time the hot water is recovered ...

This paper looks at the status quo of the thermal energy storage in the Netherlands and the part that aquifer storage plays in them while also taking a closer look at distinct projects that are ...