USES4HEAT

Underground Large Scale Seasonal Energy Storage for Decarbonised and Reliable Heat

The heating sector is on its way to climate neutrality! Thermal energy storages are key solutions that can be integrated in district heating networks and reduce energy losses, accumulate different sources of heat, and guarantee a reliable, decarbonised heating supply.

Store heat, cut emissions – the future of decarbonised heating is underground!

USES4HEAT will implement two large-scale, cost-effective underground thermal energy storage systems and four replication cases, each using locally available renewable energy sources, waste heat and a range of innovative technologies.



2 demostration sites

- BTES: Litomerice, Czech Republic
- ATES: Andel, The Netherlands

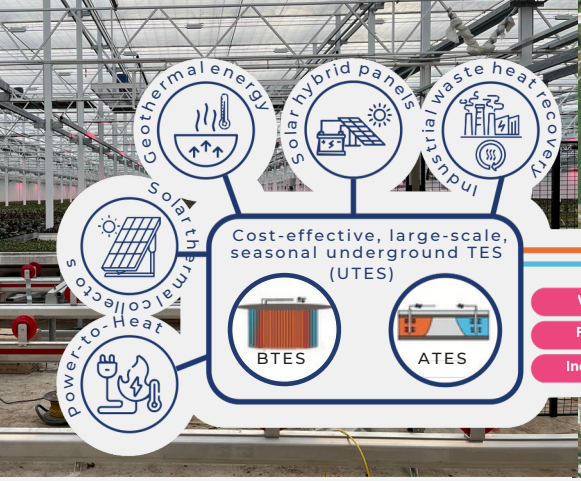
4 replication sites

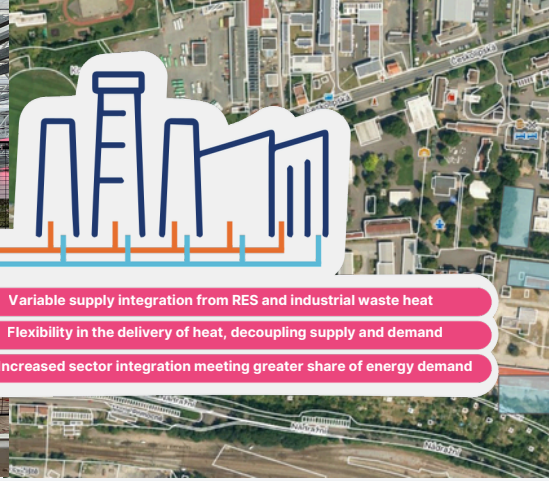
- Zagreb (Croatia)
- Lom (Bulgaria)
- Kozani (Greece)
- Kvarnholmen (Sweden)

Partners

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- Variable supply integration from RES and industrial waste heat
- Flexibility in the delivery of heat, decoupling supply and demand
- Increased sector integration meeting greater share of energy demand

Groundbreaking outputs for clean and accessible heat

- **Two large-scale underground thermal energy storage** units - aquifer TES and borehole TES - to decarbonise heat supply
- **Intelligent energy management systems** based on AI, big-data analytics and predictive operation & maintenance (O&M)
- Social, economic, financial and circular **performance** and **sustainability** evaluation of solutions
- **Market uptake**, wide-spread commercialisation and replication of the solutions across EU and beyond
- Key **enabling technologies** for increased flexibility, availability and robustness of the heating sector:

a drilling solution for geothermal applications

high-temperature ground-water heat pump

highly efficient hybrid photovoltaic thermal panels

collector piping materials and solutions

highly efficient solar thermal collectors

AI driven and big data analytics based predictive energy software

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