TREASURE

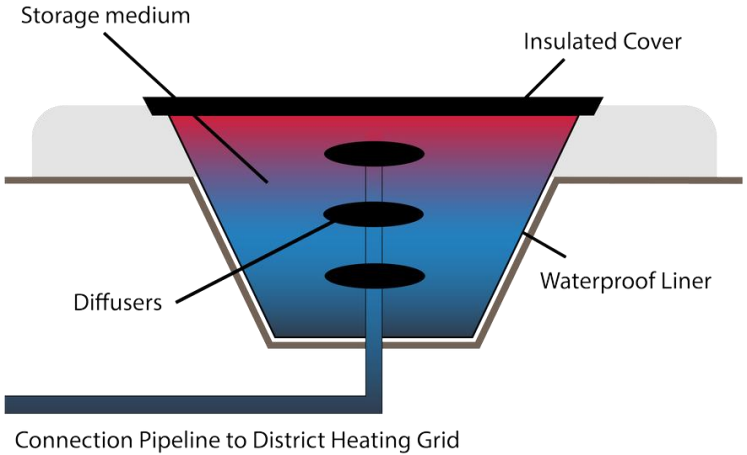
Demonstrating large pit thermal energy storages and improving their components, processes, and procedures for an accelerated realisation of 100% sustainable district heating networks in Europe.

Practice examples of Pit Thermal Energy Storages

Funded by the European Union

The TREASURE project is developing large underground thermal energy storages essential for utilizing renewable energy in heating communities and industries.

Project runtime: 2024-2027



GOALS

01 Bridge the gap between research and practice to ensure robust, safe, cost effective and sustainable large-scale thermal energy storage.

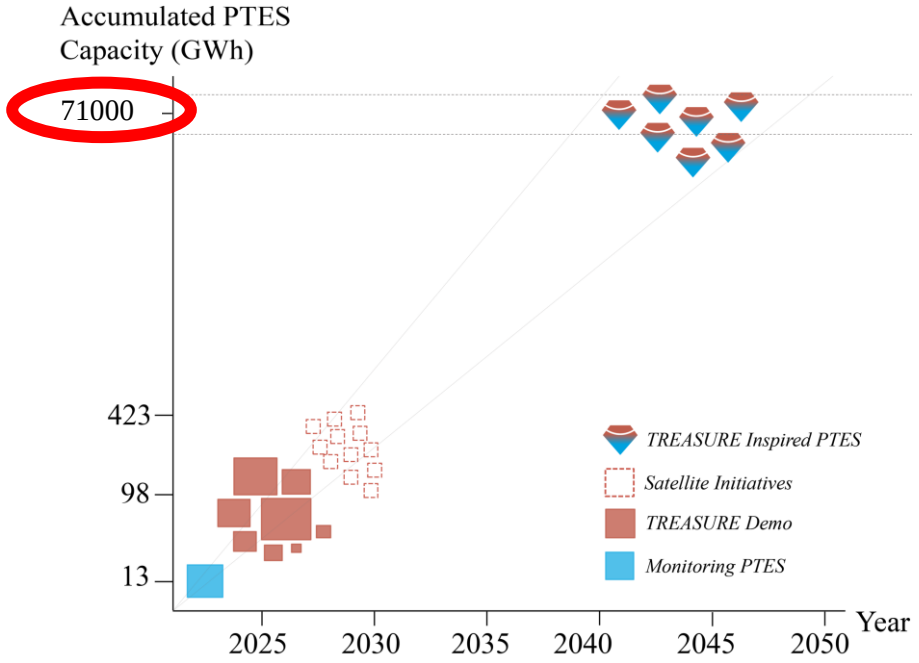
02 Develop secure and smart system integration concepts.

03 Increase the effectiveness of realization and replication speed for realization of PTES in line with the European Green Deal priorities.

Potential of Pit Thermal Energy Storage for DH in Europe

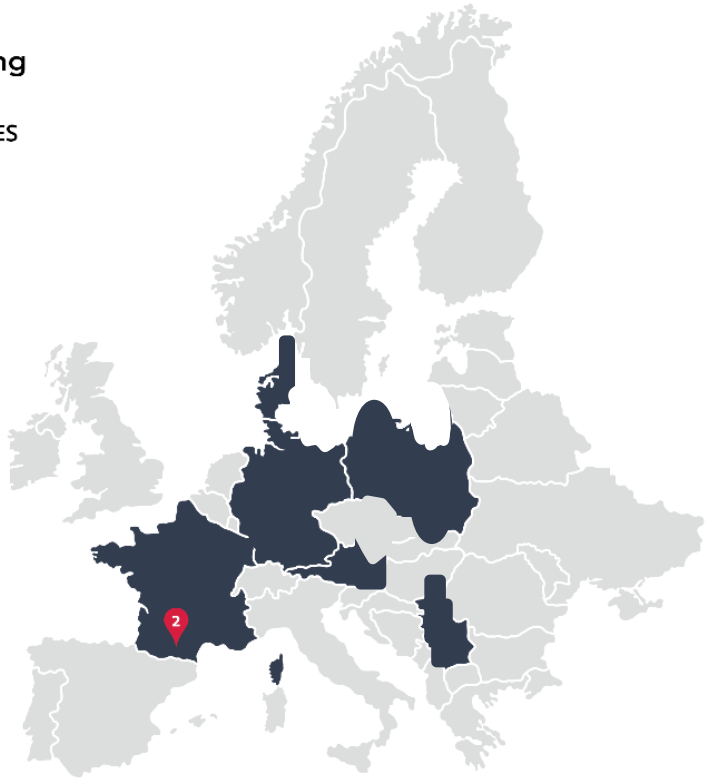
Based on:

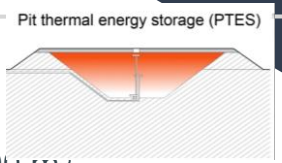
- Projected EU total DH final energy consumption 1784 TWh (2050)
- 10 % of annual heat sales to be stored
- 40% of LTES for DH is PTES
- PTES capacity for DH needed in 2050: 71.000 GWh



Demonstrator: Pau

Demonstrators	Monitoring
Location	Volume of PTES
2 Pau	340.000



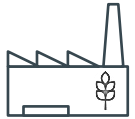


Pau

PTES
Volume: up to 340.000 m³
Operation planned: 2026-2027

Demo in the city of Pau (FR) with ca. 77.000 inhabitants;

Heat sources are waste incineration heat, biomass and gas boiler (will be changed)

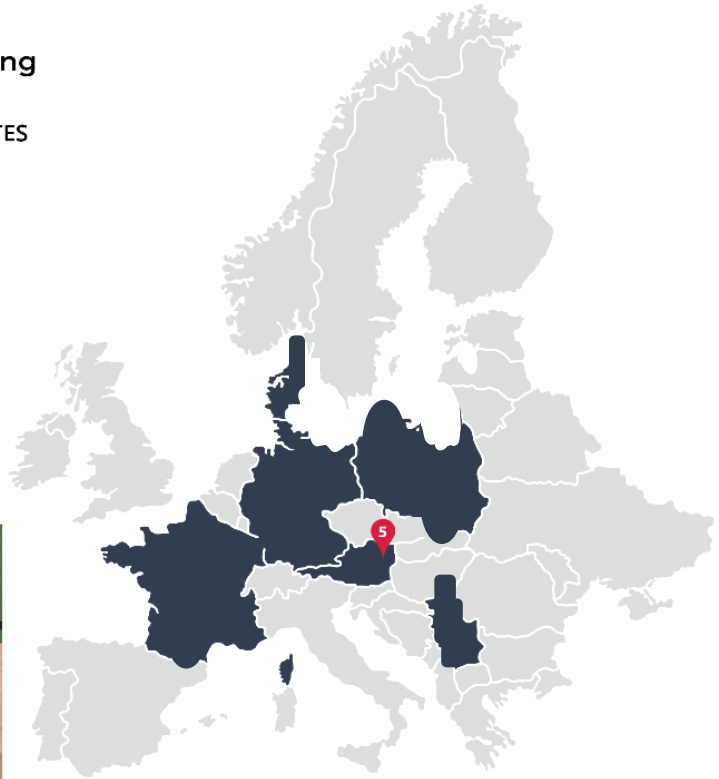


Biomass

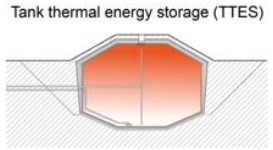
Demonstrator: Vienna

Demonstrators	Monitoring
Location	Volume of PTES
5 Wien	40.000

Quelle: Wien Energie



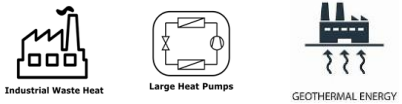
Wien



TTES
Volume: 40.000 m^3
Planned in operation: 2028-2029

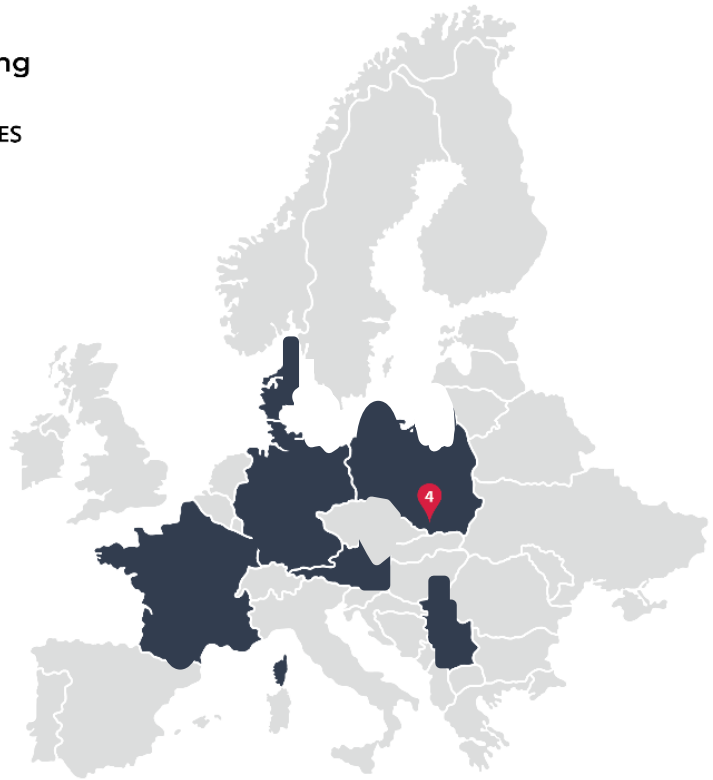
Pilot storage for Vienna, Austria; ca. 2 million inhabitants

Heat sources are geothermal, waste heat and heat pumps

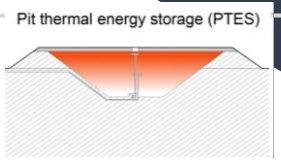


Demonstrator: Bytom

Demonstrators	Monitoring
Location	Volume of PTES
4 Bytom	90.000



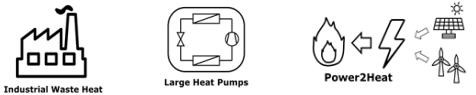
Bytom



PTES
Volume: up to 90.000 m^3
Planned in operation: 2026-2027

Demo storage for the city of Bytom, Poland; ca. 165.000 inhabitants

Heat sources are waste heat or power-to-heat with heat pumps



Development activities

- Numerical simulation (storage, system)
- Monitoring of performance
- Component development: lid, walls
- Process improvement (performance indicators, handbook, experience exchange, S-BIM, legal, permits)
- Economic, environmental impact and social acceptance
- Exchange with satellite initiatives (16 other PTES up to now)

CONSORTIUM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SUBSURFACE EXPERTISE


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an der Johannes Kepler Universität Linz


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Thank you for your attention!

Contact us if you have any questions.

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