ISEC 2026 – 4th International Sustainable Energy Conference 2026, 16th April 2026
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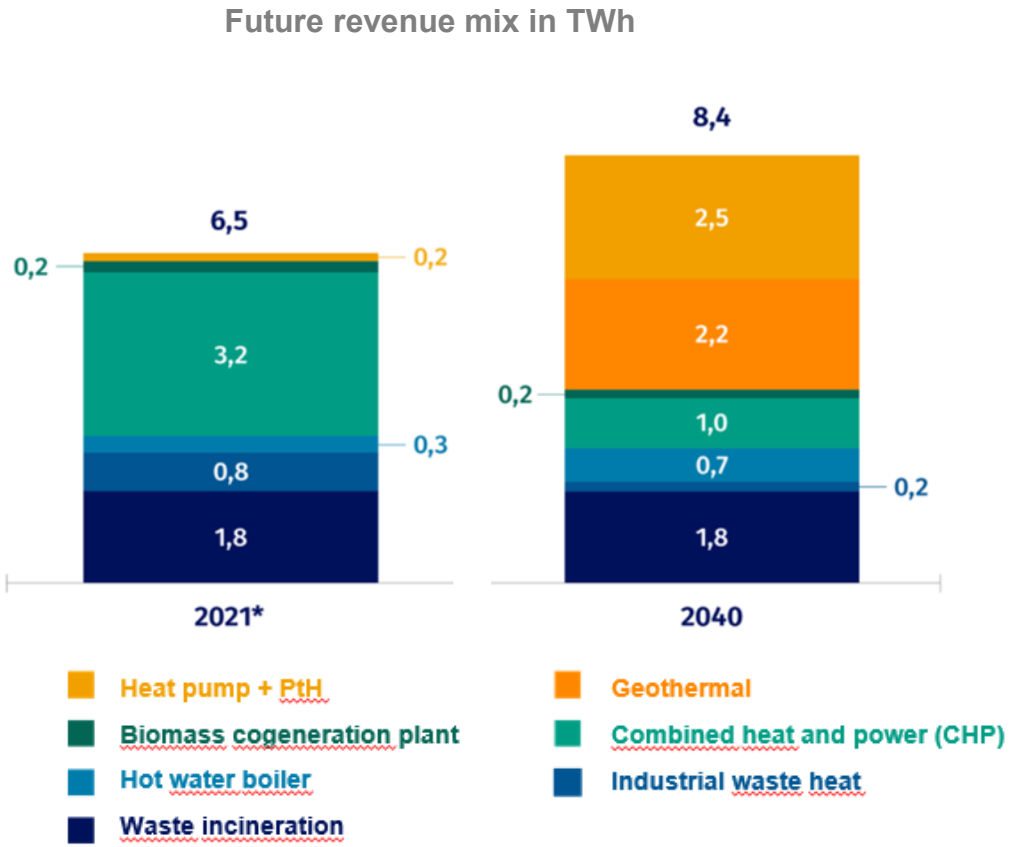
WIEN ENERGIE
WIENER STADTWERKE GRUPPE

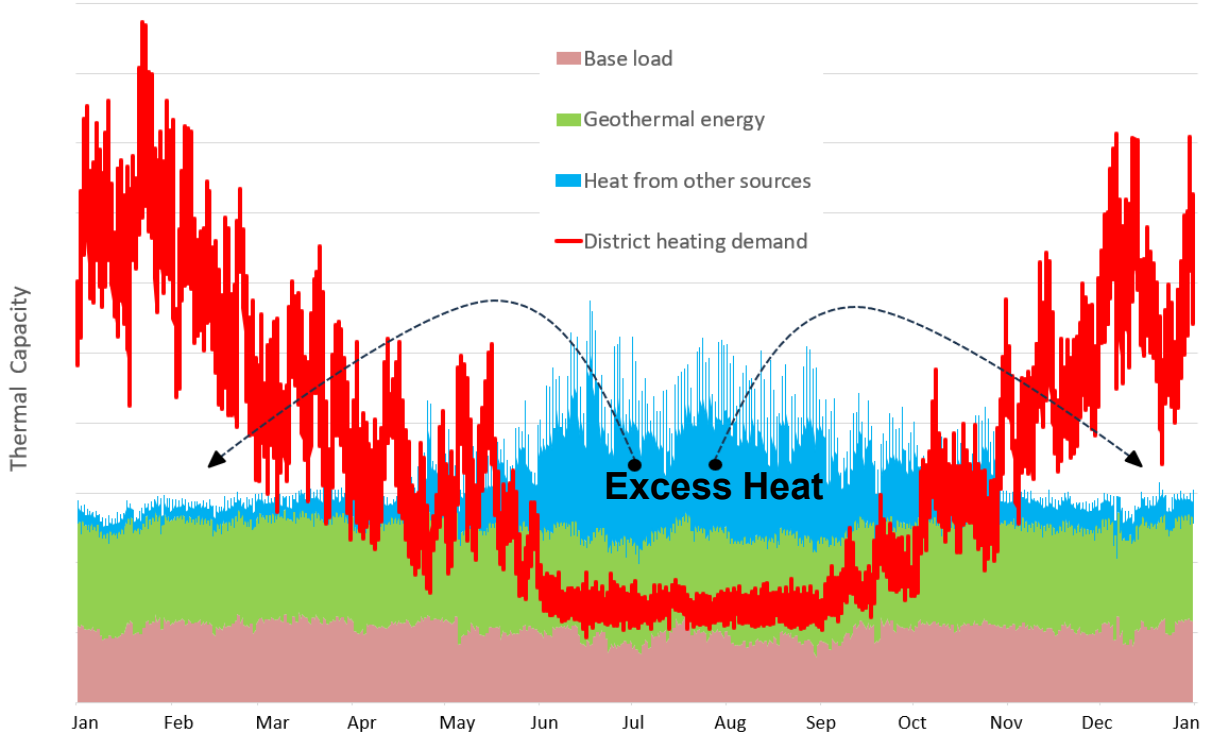
ScaleUp

Seasonal underground thermal energy storage as key technology for climate-neutral district heating in Vienna

Key role of heat storages in Vienna

Wien Energie aims to make Vienna climate-neutral by 2040





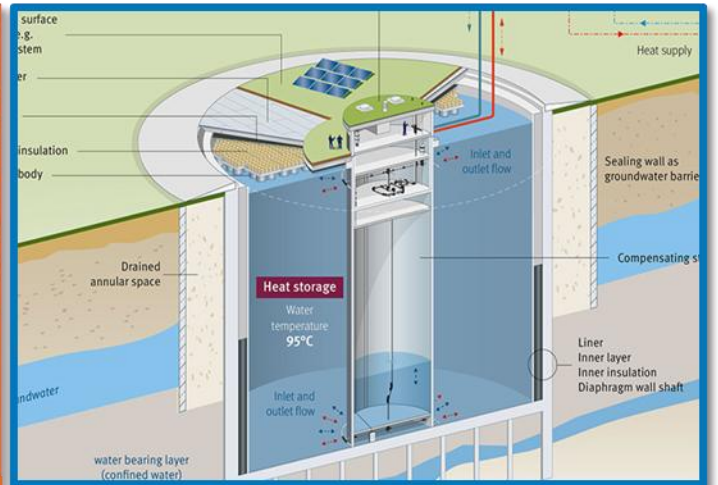
Excess heat from summer can be stored and reused in winter, increasing overall system efficiency and reducing emissions.

Integrating thermal energy storage (TES) into decarbonized DHC

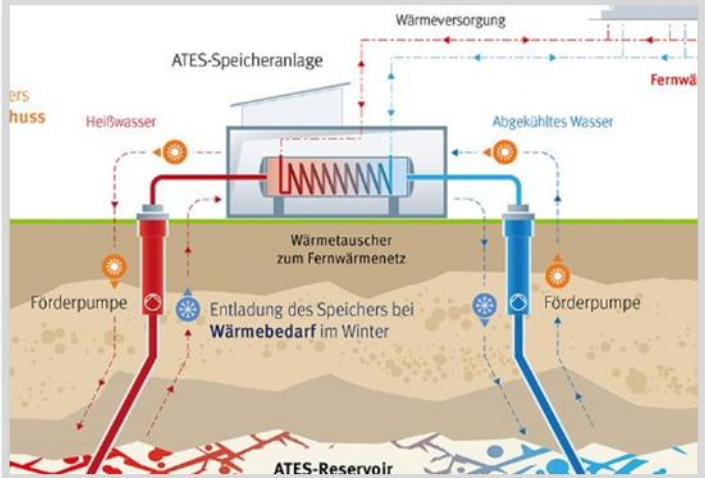
Thermal storage contributes to decarbonization and flexibility

Flexibility ⟷ Seasonality

Short-term thermal storage



Pit thermal energy storage



Aquifer storage

Integration

- **Storage volume**: up to 55.000 m³
- **Storage temperature**: up to 150°C

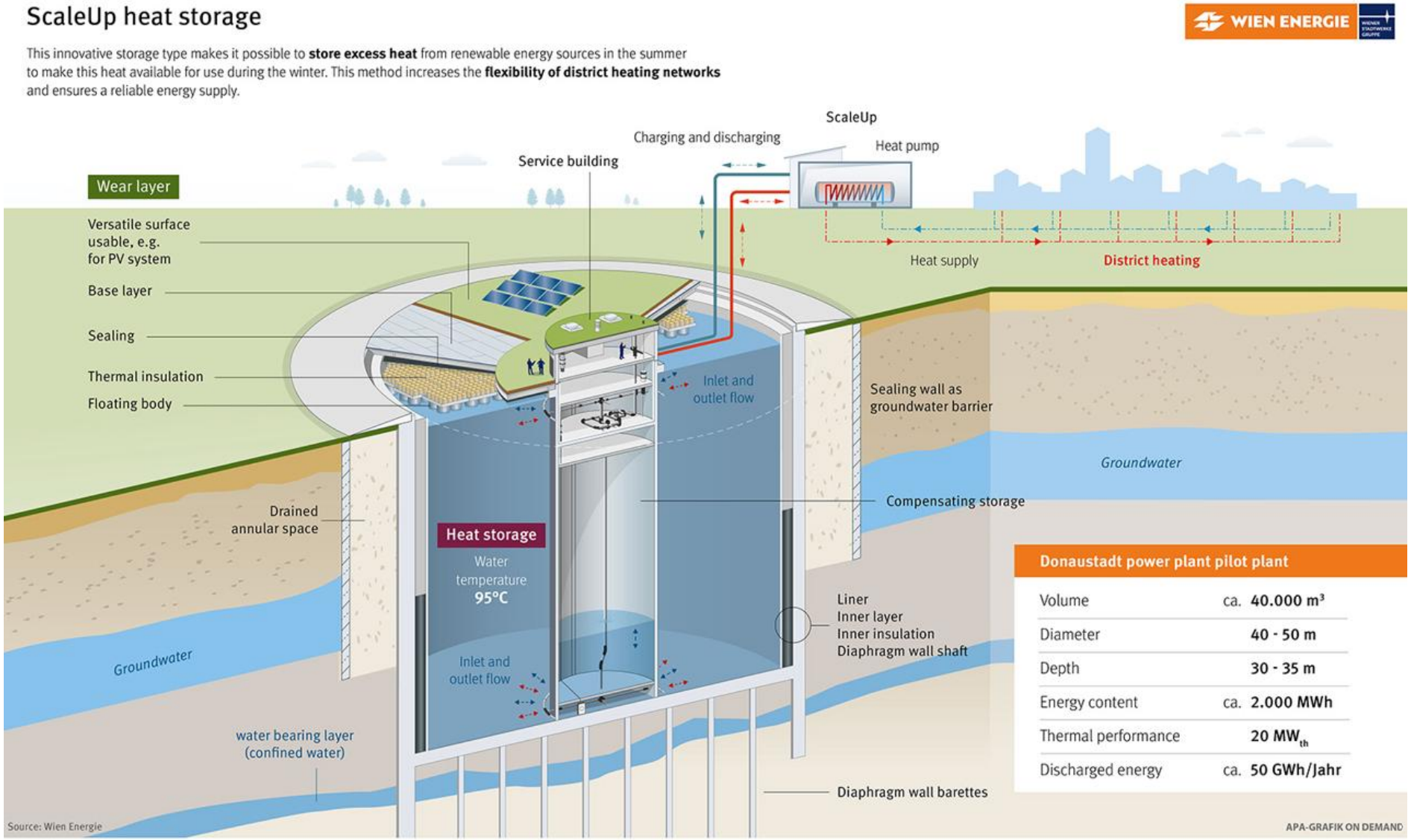
Pilot

- **Storage volume**: up to 500.000 m³
- **Storage temperature**: up to 95°C

Research

- **Storage volume:** not distinguishable
- **Storage temperature:** up to 95°C

Integrating thermal energy storage (TES) into decarbonized DHC



European Investment Bank
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klima+ energie fonds

Integrating thermal energy storage (TES) into decarbonized DHC

Location of the storage facility at the Donaustadt power plant

Site selection

Use of existing Wien Energie plant

Hot spot for renewable district heating

Upcoming and additional technologies: ScaleUp, deep geothermal plant, large heat pumps, short-term thermal storage

Currently existing technologies: CHPs, Gas-Boilers

Integrating thermal energy storage (TES) into decarbonized DHC

Scale-Up: Research and planning activities regarding to the walkable surface

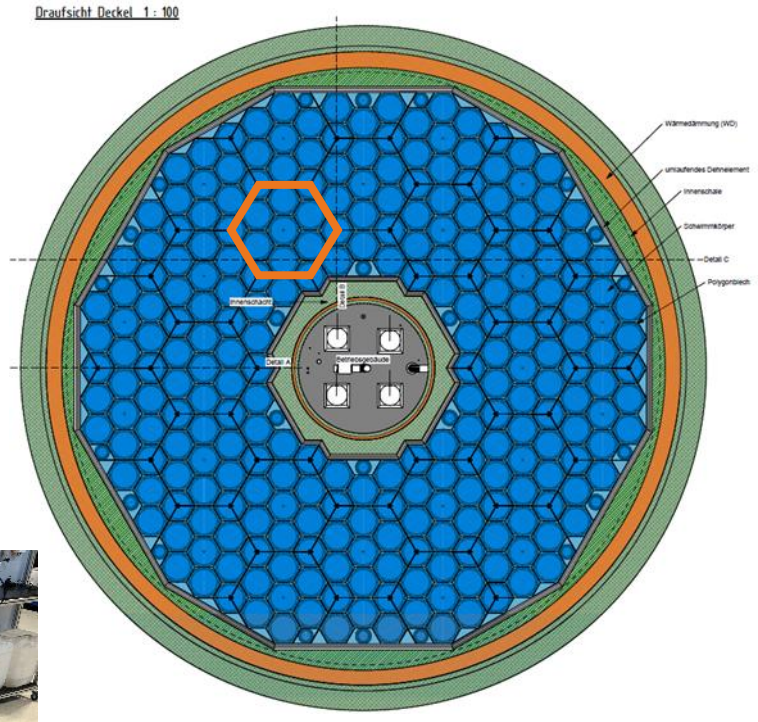
Floating cover model

Two experimental setups

- carried out by JKU Linz
- Q4 2023 – Q2 2025

Testing the diverse requirements

- Walkable, usable space is essential for urban-scale deployment
- Solutions must preserve public accessibility and urban quality
- Storage integrated seamlessly into the cityscape



Ingenieurbüro ste.p ZT-Gmbh

GVT Verfahrenstechnik GmbH

Status Quo and Conclusion

ScaleUp – Heat Storage Vienna

- To **achieve climate neutrality**, approximately **56% of Vienna's heating demand** must be **covered by district heating**, underlining the need for large-scale and efficient solutions, including thermal storage.
- The pilot **integrates key innovations** such as scalable usable surfaces, an integrated expansion tank for pressure and temperature control, and a cylindrical design that optimizes thermal stratification while **minimizing visual impact on the cityscape**.
- Large-scale thermal storage reduces the need for additional generation capacity and **increases overall system efficiency and flexibility**.
- **Key project components are progressing**, including ongoing tenders for civil engineering and floating cover/liner, preliminary heat pump sizing, and coordinated site logistics in parallel with other renewable energy projects.
- Implementation is organized in multiple lots without a general contractor, with Wien Energie responsible for interface management through commissioning.

Contact

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Asset Decarbonisation and New Technologies
Decarbonised Heat Generation Assets

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