



IEA Geothermal



# TREASURE

## demonstrating 7 Pit Thermal Energy Storages in Europe

Wim van Helden, AEE INTEC



Funded by  
the European Union



# 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.



# Example of PTES

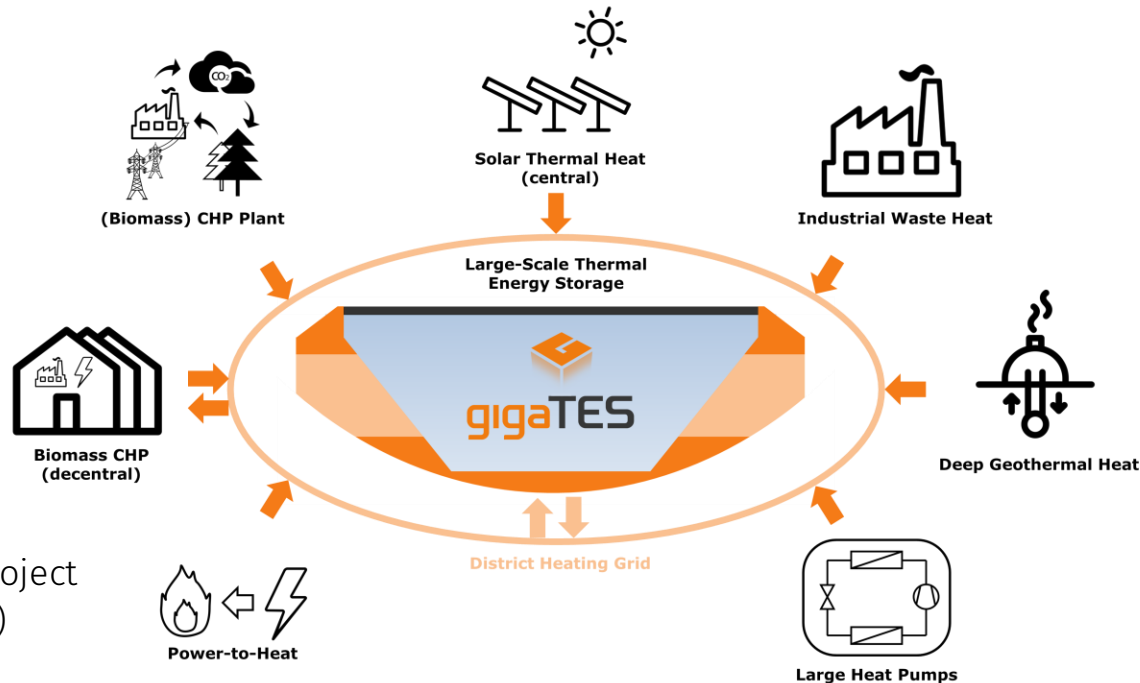


*Pit thermal energy storage  
in Vojens, DK. 200.000 m<sup>3</sup>*

Source: Arcon-Sumark



# LTES as pivotal element in the future district heating systems



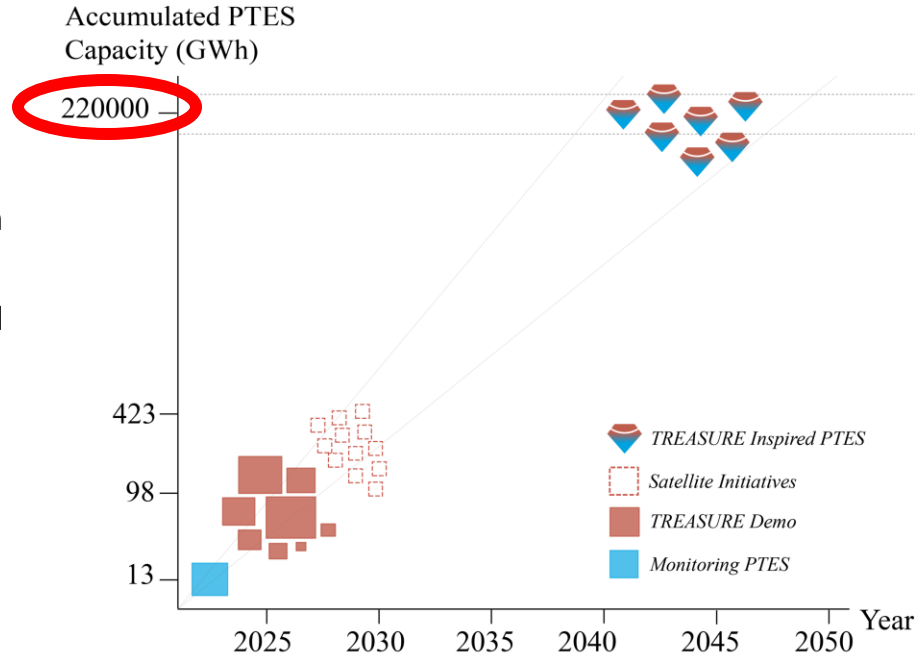
Austrian Flagship project  
 giga\_TES (2018-2021)  
<https://gigates.at>



# Potential of Pit Thermal Energy Storage for DH in Europe

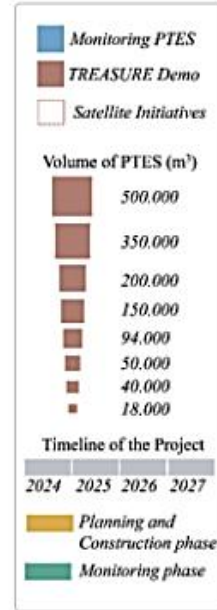
## Based on:

- EU total DH final energy consumption 446 TWh (2018)
- 30% of annual heat sales to be stored
- 40% of LTES for DH is PTES
- Presently needed PTES capacity for DH of 54000 GWh
- 4-fold growth of DH until 2050





# Demonstrators



TREASURE enables the realization of seven Pit Thermal Energy Storage (PTES) demonstrators in five different countries



# Measures to accelerate the uptake of PTES

## Raising awareness

- Information about technologies, processes, permits, procedures, ...
- Active dissemination to and participation of stakeholders

## Reduce uncertainties

- Awareness on permitting; uniformity of procedures
- Work on standardisation; key performance indicators

## Shorten the realisation time

- Uniform communication and protocolling; experience exchange

## Decrease costs

- Component and process developments; experience exchange



# Raising Awareness

- Exploitation and commercialisation plans
  - EU-wide regulatory and policy measures
  - Roadmaps to wide-scale replication
- } WP7
- Targeted information for stakeholders
  - Training workshops
  - Interaction with (15) satellite initiatives
- } WP8





# Reduce Uncertainties, Shorten Realisation time

- LCA, techno-economic and social assessment WP6
- Monitoring plans WP5
- Development of workflow, tools and KPIs WP4
- Storage Building Information Model, S-BIM WP3



# Decrease Costs

- Components and Process development

Walls, cover design

Improved (design) simulation models

Reduction of corrosion risks

Implementation guidelines

} WP3

WP2 { Optimisation of realisation phases with Demo partners

★ Pre-feasibility ★ screening ★ financing ★ organisation ★ permits

★ technical design ★ monitoring ★ maintenance and operation



# Conclusion

LTES are key to 100% renewable and flexible DH systems

TREASURE will work on components, processes and procedures to accelerate market uptake of LTES



# Consortium partners

- Municipalities/DH companies  
SEC & SEC Region (PL); Pau (FR); JKP Grejanje Pacevo (RS); Stadtwerke Hechingen (DE); RAFAKO (PL); Hansestadt Rostock (DE); Wien Energie (AT)
- Planners, engineers  
Newheat (FR); Aalborg CSP (DK); SOLID (AT); ENGIE (FR)
- Construction companies, materials producers:  
PORR (AT); VINCI (FR); Glapor (DE)
- R&D institutes:  
AEE INTEC (AT); Planenergie (DK); Solites (DE); Hamburg Institut (DE); DTU (DK); Energieinstitut JKU (AT); GEO (DK); Technische Universität Dresden (DE)
- Dissemination, exploitation, stakeholders:  
Fenix TNT (CZ); Euroheat & Power (BE)

**FOLLOW US**



**[www.treasure-  
project.eu](http://www.treasure-project.eu)**

