



Unlocking ATEs: Scaling Sustainable Heating & Cooling Across Europe



Who is dtess?

- **Dutch**
 - Consultant company based in the Netherlands
 - Active in: BE, DE, JP, SK, UK, US, EU, CA
 - Owner Bas Godschalk
- **Thermal Energy Storage**
 - Shallow and deep geothermal energy projects
 - Focus on ATES, HT-ATES, BTES, Surface Water
 - Innovations in thermal energy storage
- **Solutions**
 - Project Management
 - Business Development
 - Knowledge Exchange



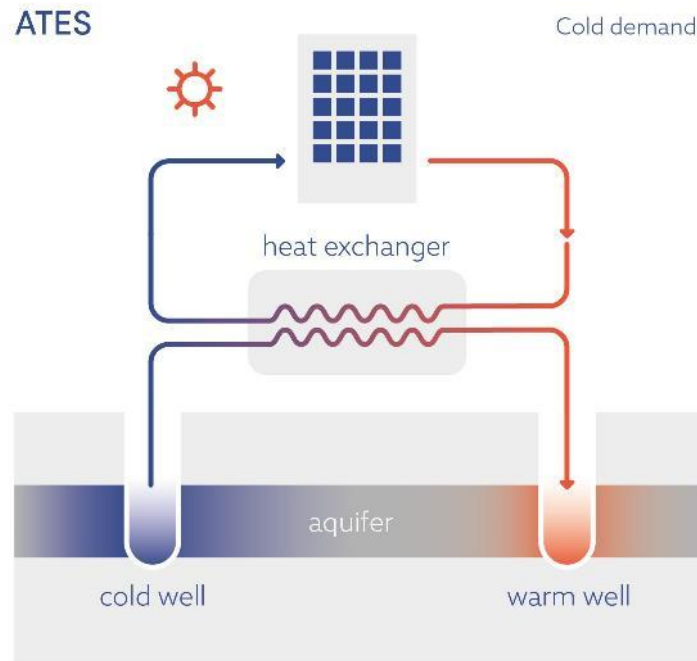
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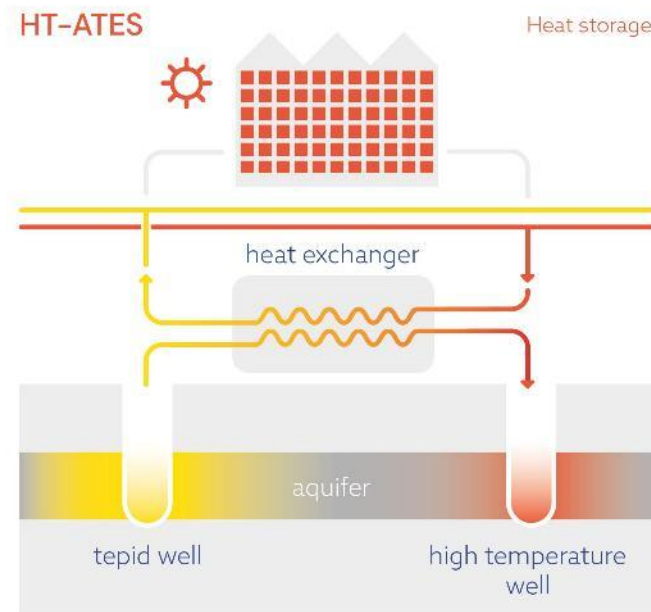
ATES – seasonal heat & cold storage



What	Result
Cold well	7 – 10 °C
Warm well	15 – 20 °C
Depth wells	25 – 250 m
Flow rates	25 – 250 m ³ /h
Capacity per well	200 – 2,000 kW
Investment	500 – 1,500 k€
Cooling COP	30 – 40
Heating COP	4 – 5
Potential CO ₂ savings	Up to 70%
Primary energy savings	Up to 50%



HT-ATES: large scale heat storage



What	Result
Tepid well	15 - 25 °C
Hot well	50 - 125 °C
Depth wells	100 – 800 m
Flow rates	50 – 250 m ³ /h
Capacity per well	5 – 20 MW
Investment	5 - 15 M€
Heating COP	> 100



ATES future



Where are we heading in 2050?

- 20,000 ATES systems
- Sustainable heating and cooling
 - Large scale heat storage in district heating networks



Key challenges



- Awareness of the benefits of ATES
- Capacity building and entrepreneurship
- Development of regulatory framework
- Optimized design
- Local demonstration ATES projects
- Development ATES feasibility maps and access to hydrogeological data
- Energy and system integration
- Business case examples



How DTES can support?



Think in solutions

- From idea to realisation
- Feasibility study
- Design & permits
- Supervision during realisation
- 20% cost reduction



Driven by business

- Develop your geothermal business
- Value chain mapping
- Stakeholder analysis
- Critical success factors



Sharing is caring

- Facilitating and accelerating exchange of knowledge and experience
- Training & courses
- Organize trade trips and fact-finding missions