



**12th Swiss Symposium Thermal Energy Storage**  
**Lucerne University of Applied Sciences and Arts**  
**Stories of Seasonal Thermal Energy Storage 24.1.2025**

Industrial and Pilot Session -> examples Bern



# agenda



Introduction to Martin Jutzeler and Energie Wasser Bern ewb



Overview of environmental energy and storage in Bern CH



1. ATES/BTES: Geothermal project Forsthaus Bern



2. METS: RBS train tunnel



3. ATES: groundwater Holligen



4. BETS: Geo storage idea EZ-Buech



Thermal storage systems in comparison



## Martin Jutzeler

Energie Wasser Bern, ewb - Expert heating systems ME

---

- Mechanical engineer HTL, NDS economy, CAS EPFL GES (Gouverning Energy Transitions)
- Planning, simulations and optimization of energy and infrastructure systems from central and decentralized generation and **storage**
- Identifying renewable sources, further development and documentation of the EnergyGuide & cockpit tool, support of large projects
- [martin.jutzeler@ewb.ch](mailto:martin.jutzeler@ewb.ch) +41 79 832 24 75

# We supply Bern with energy and water – safely and sustainably



[Wärmelösungen von Energie Wasser Bern](#)

[Interesse an einem Wärmeanschluss?](#)

[Fernwärme - Heizenergie für Bern](#)

[Wärmeverbunde - Gemeinsam zum Ziel](#)



# Overview of thermal activities and environmental energy Bern CH

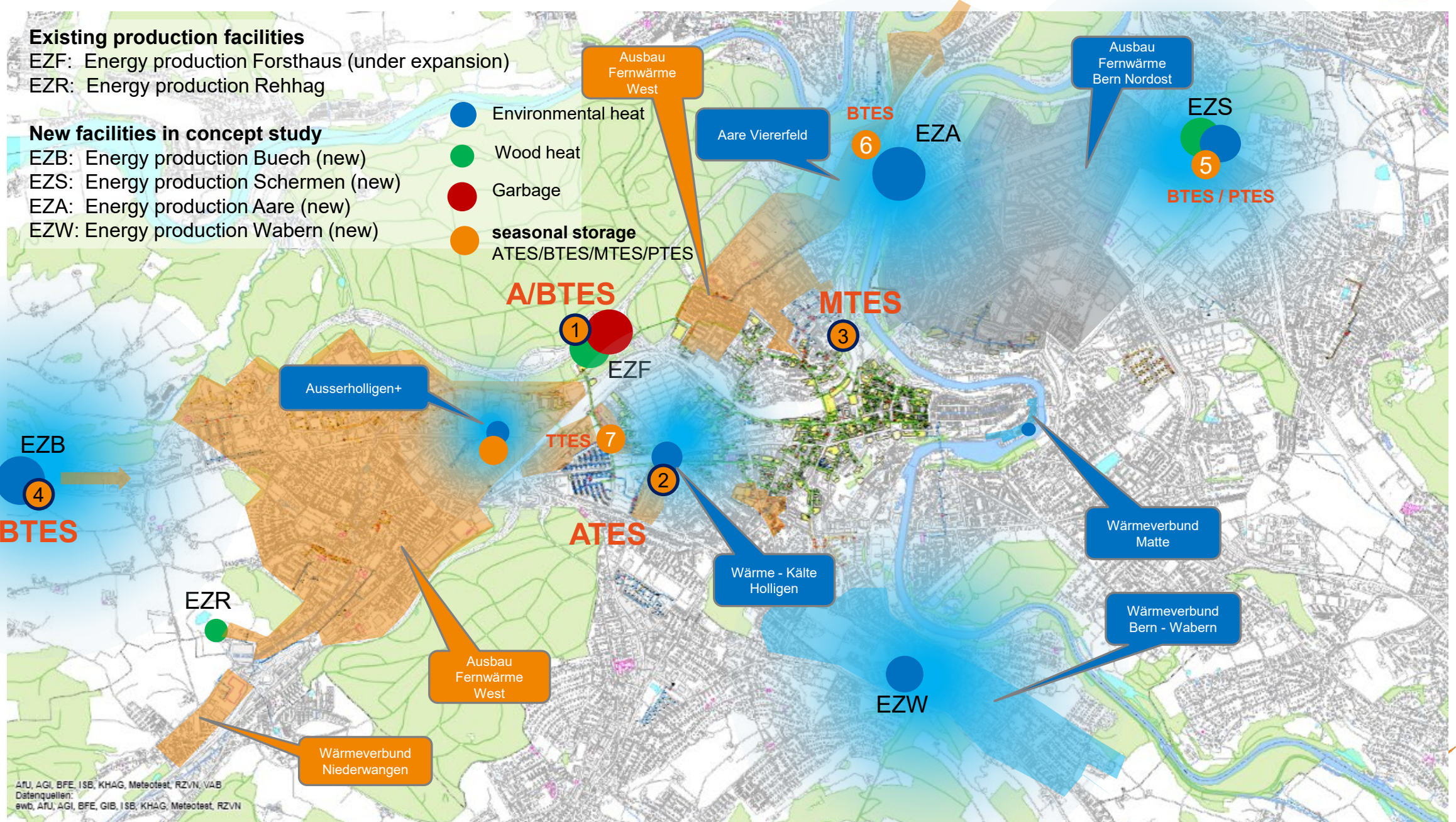
## Existing production facilities

- EZF: Energy production Forsthaus (under expansion)
- EZR: Energy production Rehhag

## New facilities in concept study

- EZB: Energy production Buech (new)
- EZS: Energy production Schermen (new)
- EZA: Energy production Aare (new)
- EZW: Energy production Wabern (new)

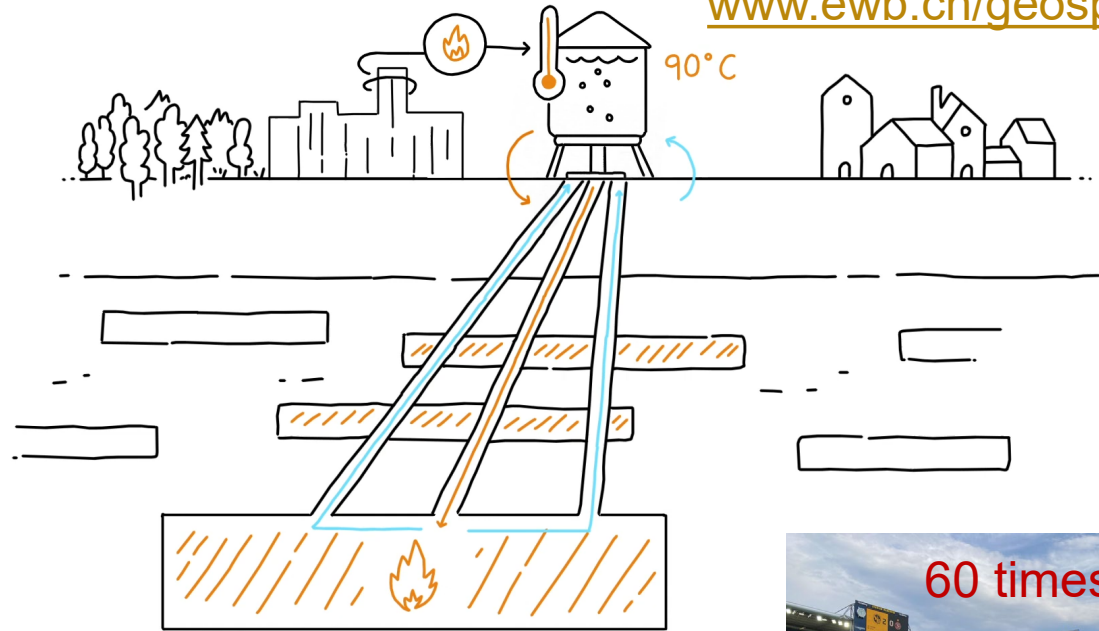
- Environmental heat
- Wood heat
- Garbage
- seasonal storage  
ATES/BTES/MTES/PTES



# 1 Exemple 1 ATES/BTES: Geothermal project Forsthaus Bern

**Next official information Q1/2025**

[www.ewb.ch/geospeicher](http://www.ewb.ch/geospeicher)



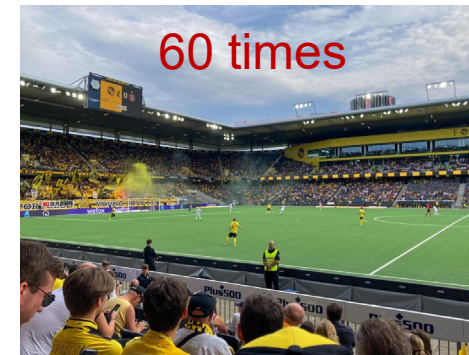
500'000 - 10'000 Jahre: Aare-Rhein

Eiszeitlicher Becken-Eiszeiten

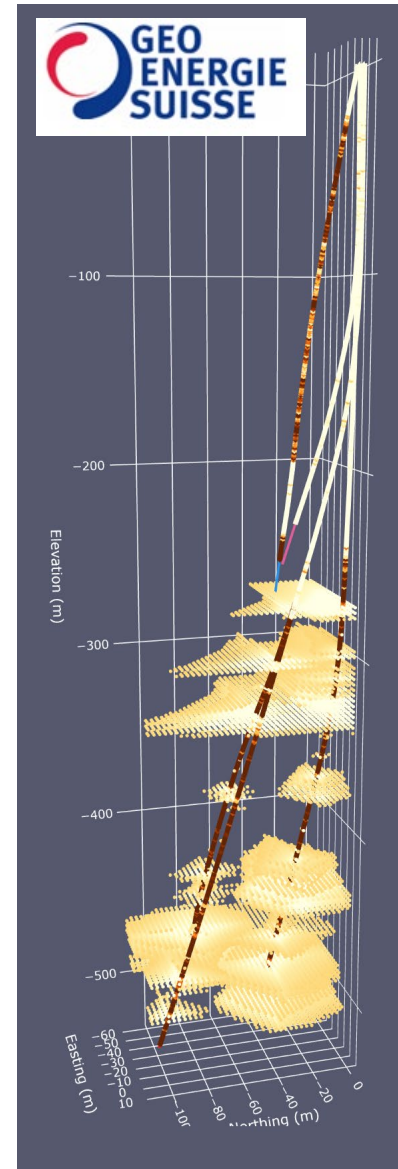
- Heutiges Flussnetz
- Ehemalige Fluss- und Schmelzwasserläufe
- Glaziale Überflutungen (Täler, Becken, Rinnen)



15 GWh ( $\Delta T = 30K$ )

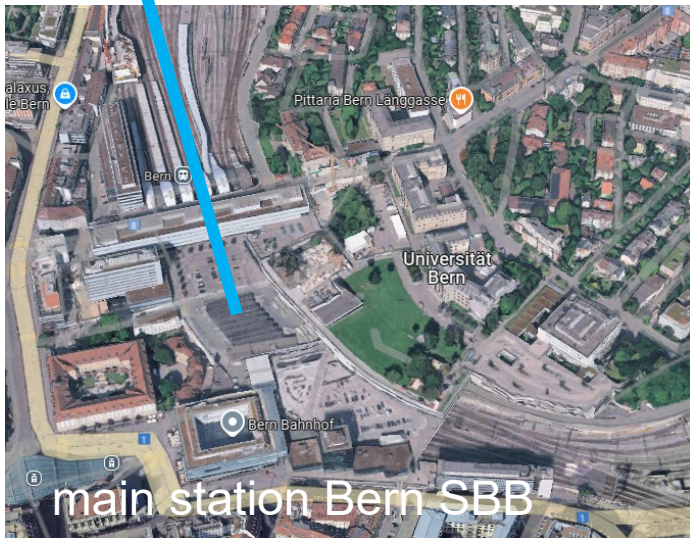
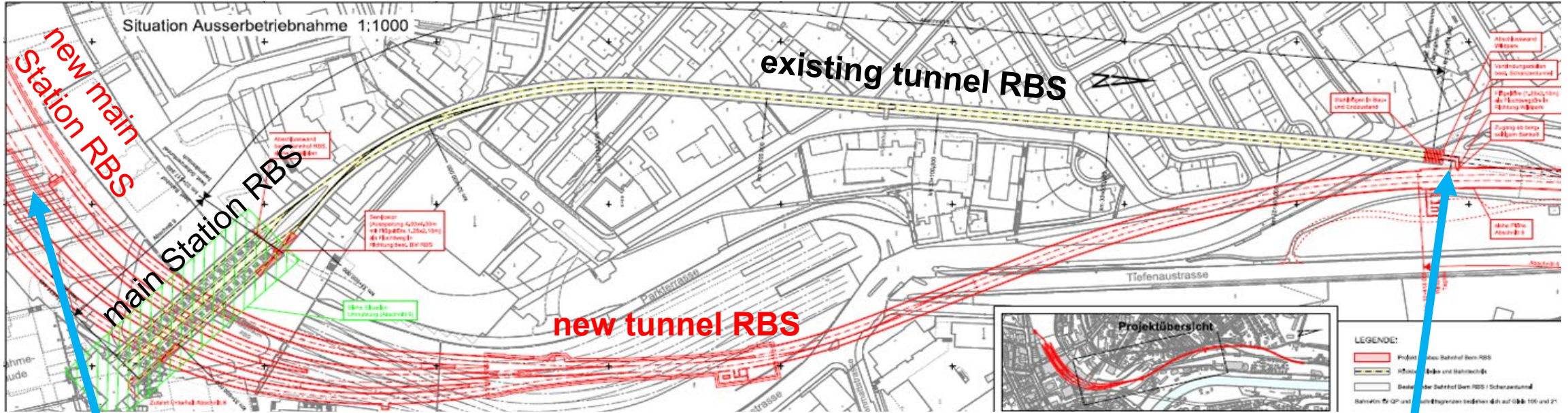


15 GWh ( $\Delta T = 30K$ )  
 430'000 m<sup>3</sup> equivalent  
 in the underground  
 = 105 x 68 x 60 m

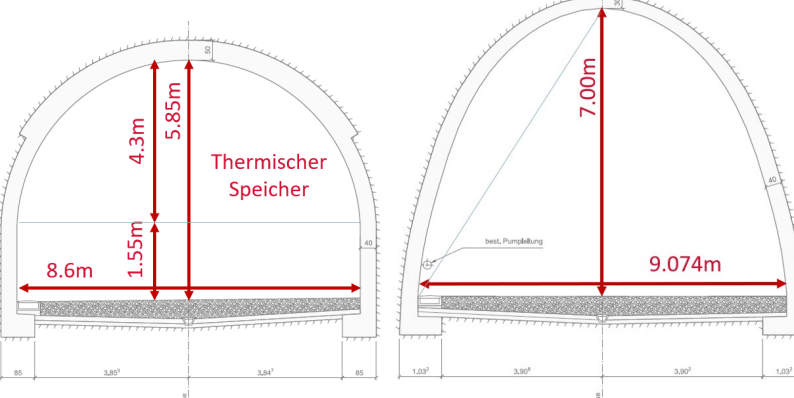


2

# Exemple 2 METS: 650m train tunnel RBS 34'000m<sup>3</sup> -> 10 times TTES

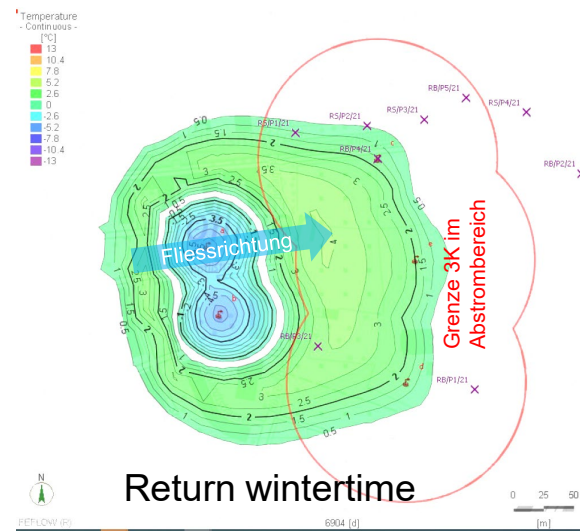
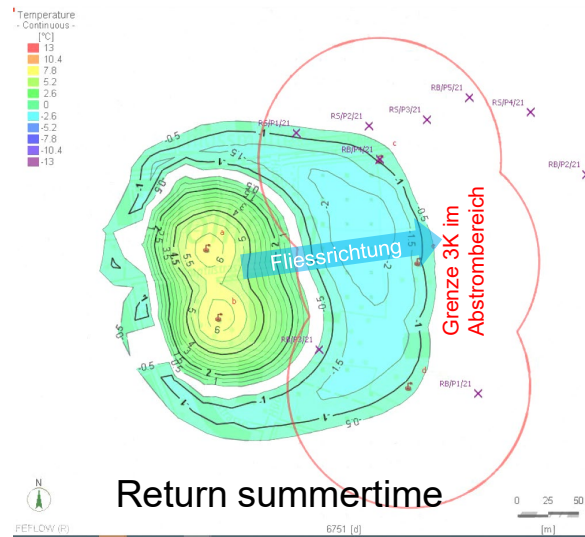
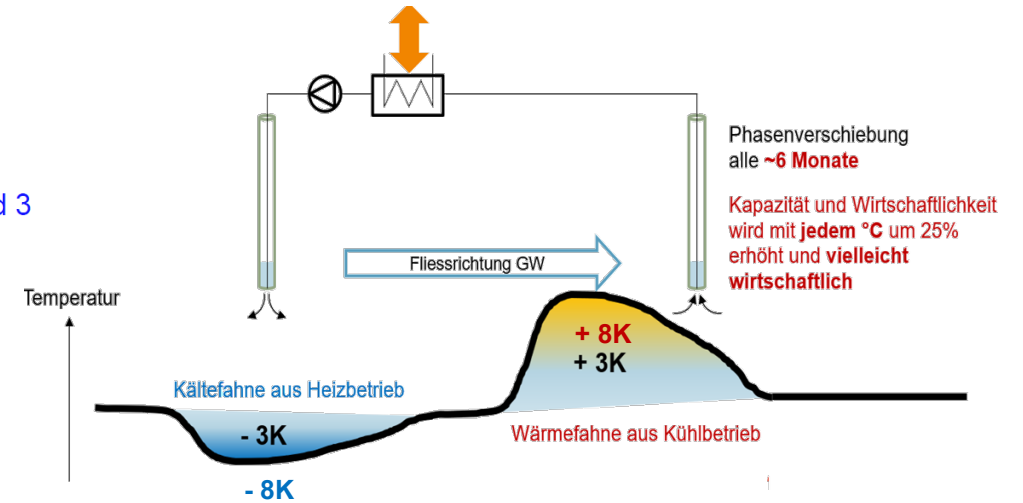
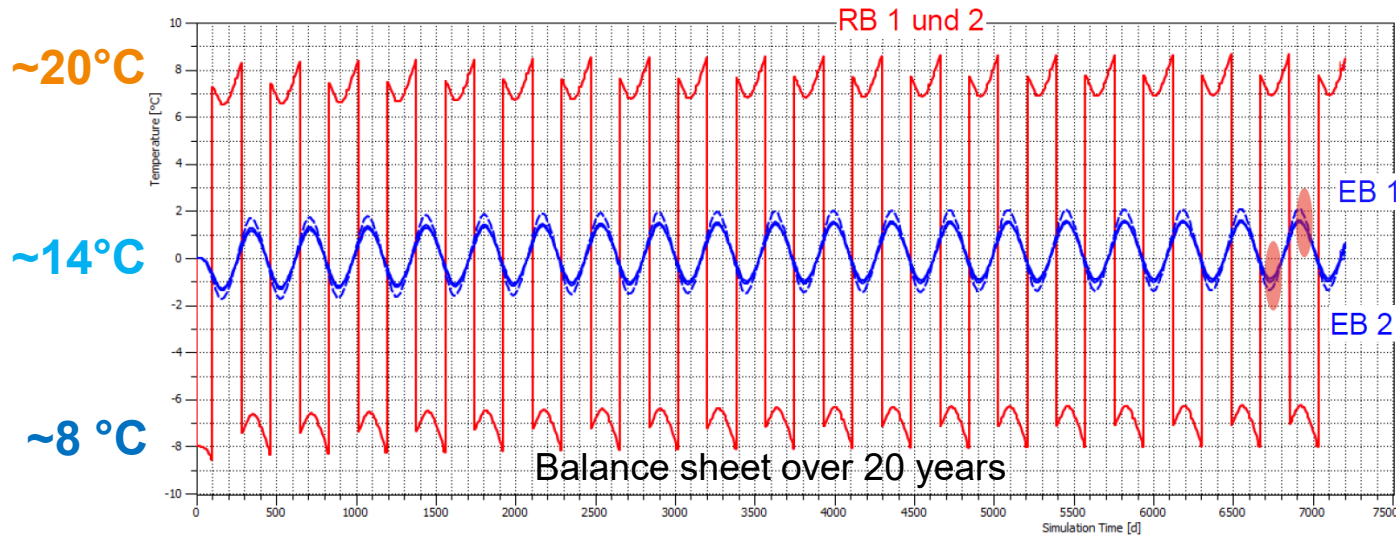


Truck access from SBB train station  
 Tunnel length: 650 m  
 Tunnel volume: 34'450 m<sup>3</sup>



# 3

## Exemple 3 ATES: groundwater Holligen



### Temperatures source

Source groundwater: ~14 °C  
 Return: 8 – 23 °C

### Temperature range heat pump

District heating preliminary run: ~45 °C

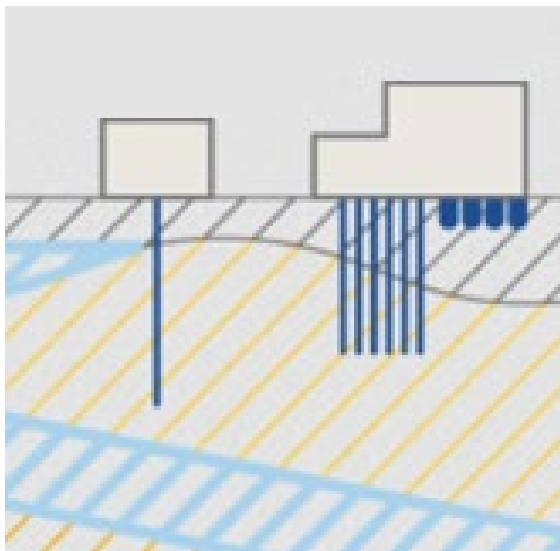
### Freecooling

District cooling preliminary run: ~ 14 °C

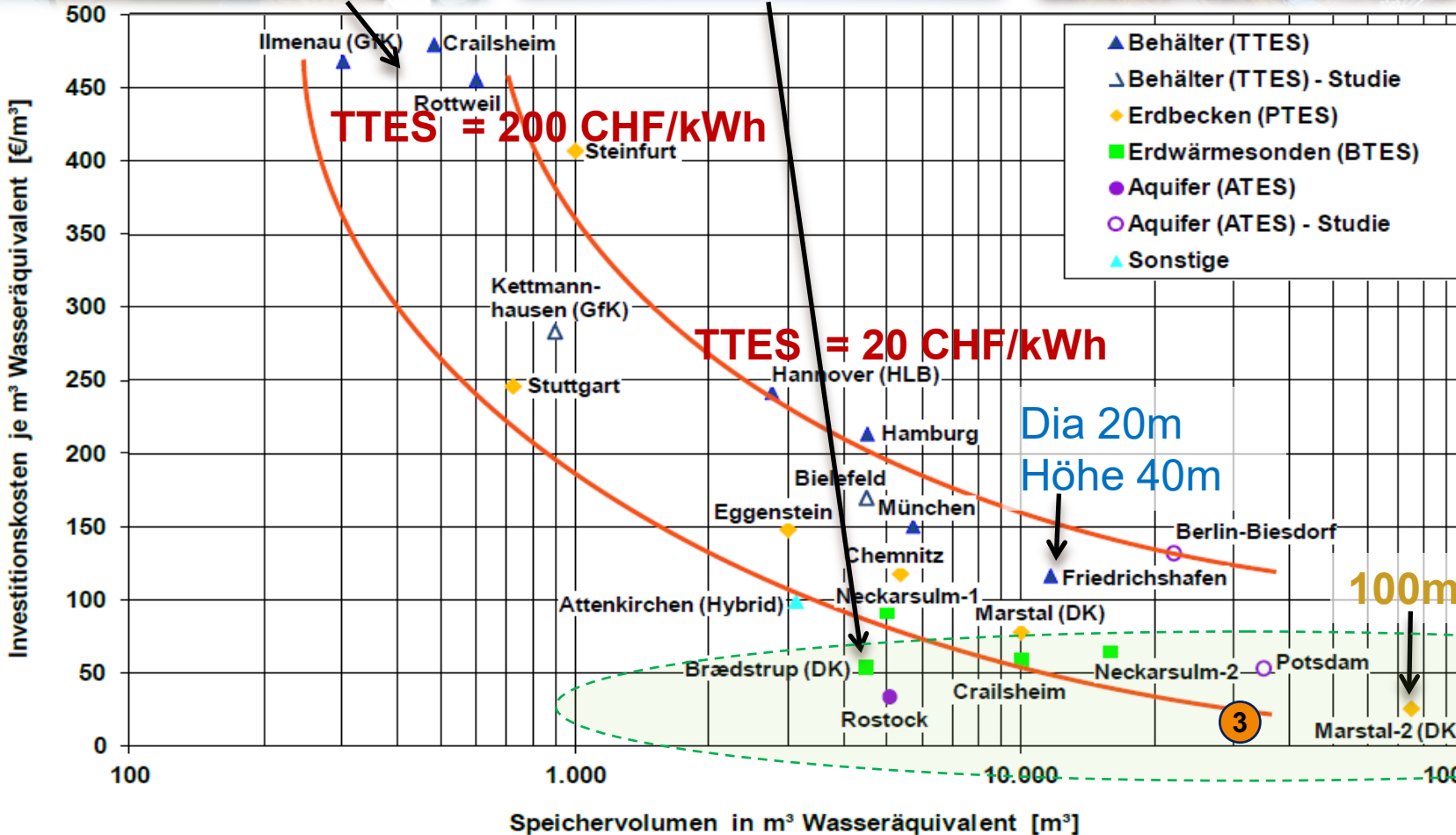
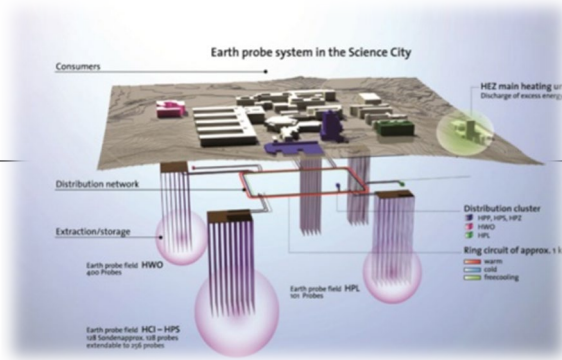
## 4 Exemple 4 BETS: Geo storage idea EZ Buech



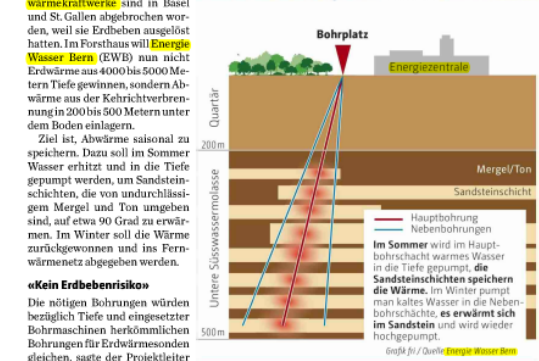
- 1 The Forsthaus energy center (EZF) feeds heat into the district heating network
- 2 The district heating network supplies properties, businesses and industry with climate-friendly heat
- 3 In summer, the Buech energy centre (EZB) stores surplus heat from the district heating network 90°C in an underground geothermal probe field. In winter, the storage facility feeds back into the district heating network.



# Thermal storage systems in comparison



## EWB will tief im Boden Wärme einlagern



- ④ Geothermal probes: BTES ~ 0.8 CHF/kWh
- ② Groundwater: ATES ~ 0.1 CHF/kWh
- ⑤ Earth basin: PTES ~ 0.5 CHF/kWh
- ③ Cavern cave RBS: MTES ~ ? CHF/kWh