Carnot Batteries

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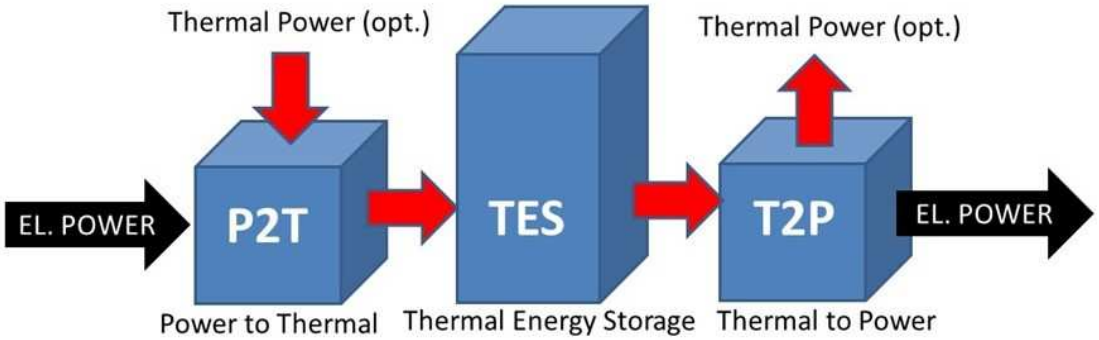
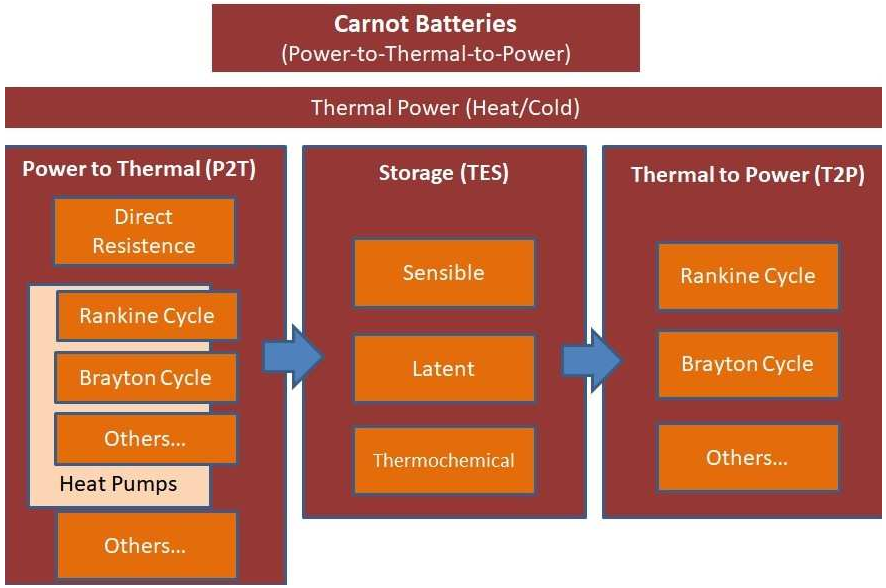
What is a „*Carnot Battery*“?

- Carnot Batteries are an emerging technology for the inexpensive and site-independent storage of electric energy at medium to large scale.
- A Carnot Battery transforms electricity into thermal exergy, stores the thermal exergy in inexpensive storage media like water or molten salt and transforms the thermal exergy back to electricity when required.





Why is it an interesting technology for the future energy system?

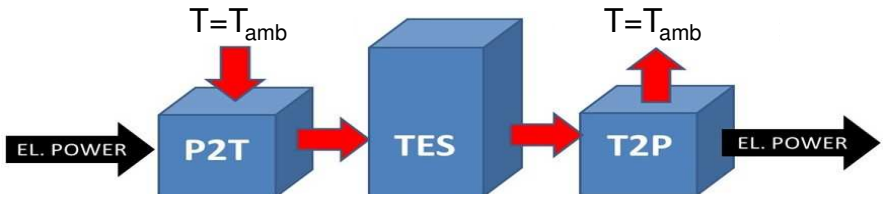
Many advantages:

- Free choice of site
- Small environmental footprint
- Life expectancies of 20-30 years
- Optional low-cost backup capacity
- The components of an fossil-fueled power plant can be partially reused to build a Carnot Battery

to consider:

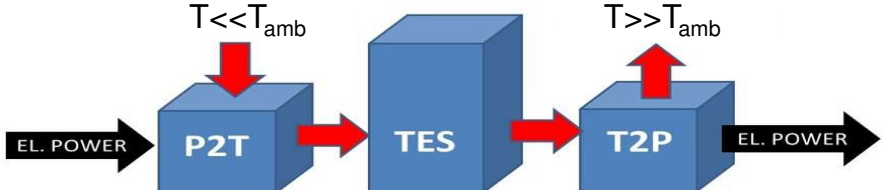
- Efficiency power-to-power 40…70%

1) Standard case



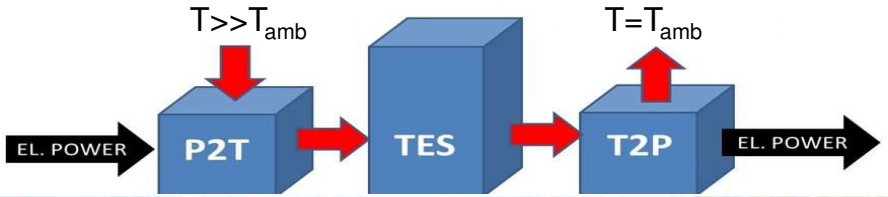
P2P = 40…70%

2) Co- or Trigeneration case



P2P < 40…70%
+P2H > 0
+P2C > 0

3) Waste heat utilization case



P2P > 40…70%

Discussion table

Discussion:

- Which applications benefit most from the heat and power flexibility capabilities of Carnot batteries?

- Can the high system costs, which are caused in particular by the power components, be better apportioned through multi-purpose use?