

The Potential of Borehole Thermal Energy Storages in the Swedish industry

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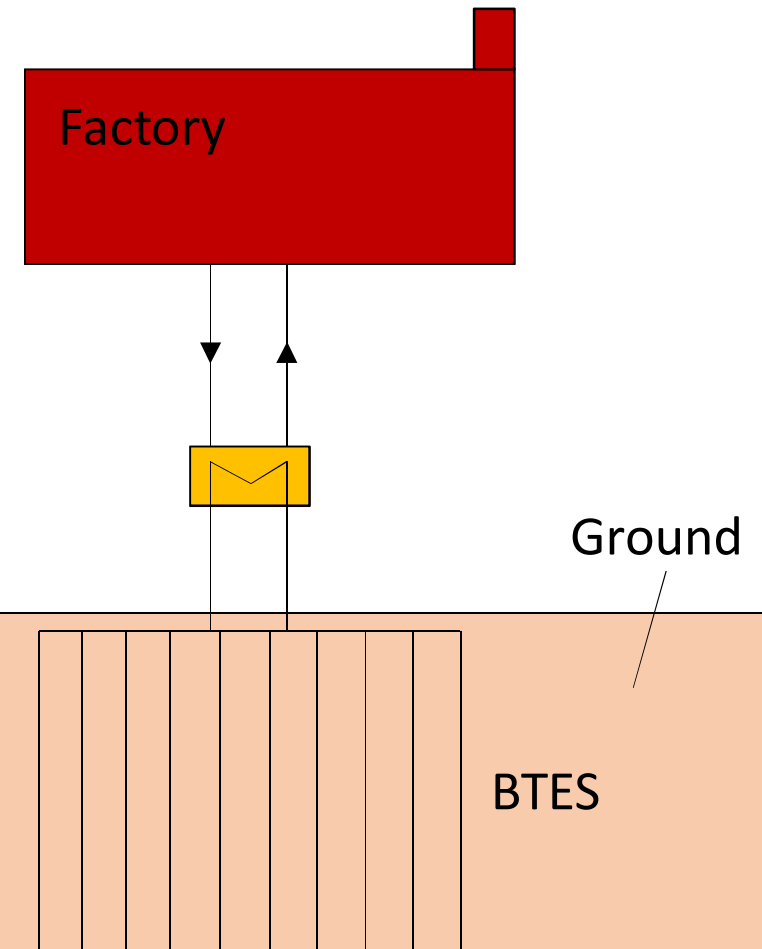
Research question

What is the potential of using BTES for storing of industrial excess heat (Swedish industry), assuming a positive economic outlook for involved parties?

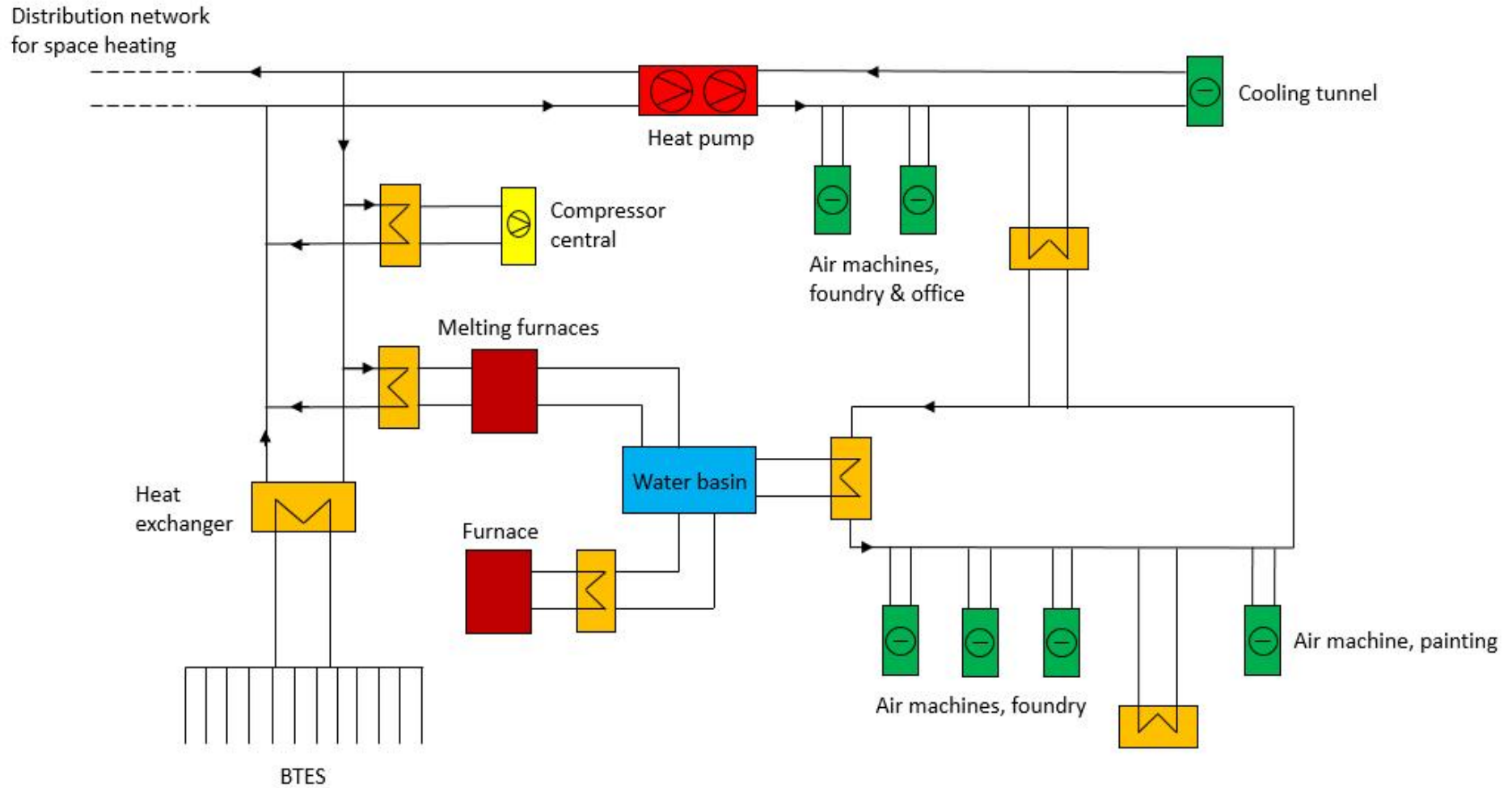
- As quantity and quality of generated heat differs, both industry-wise and between the various processes found at the specific site, the technology may be suitable for some industries meanwhile not for others, and only when integrated in certain ways.

How to solve it?

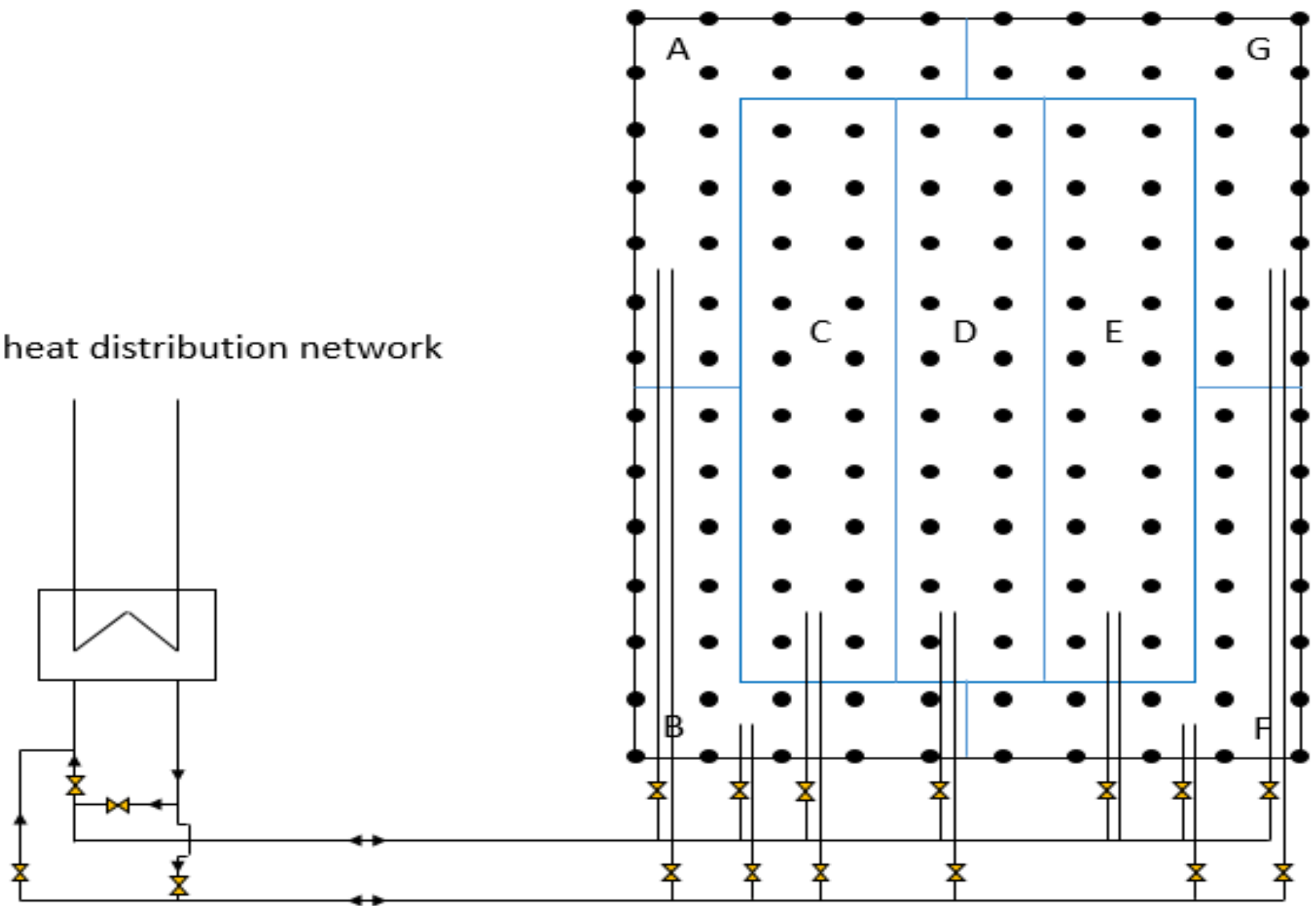
Simulations using IDA ICE including its BTES module.



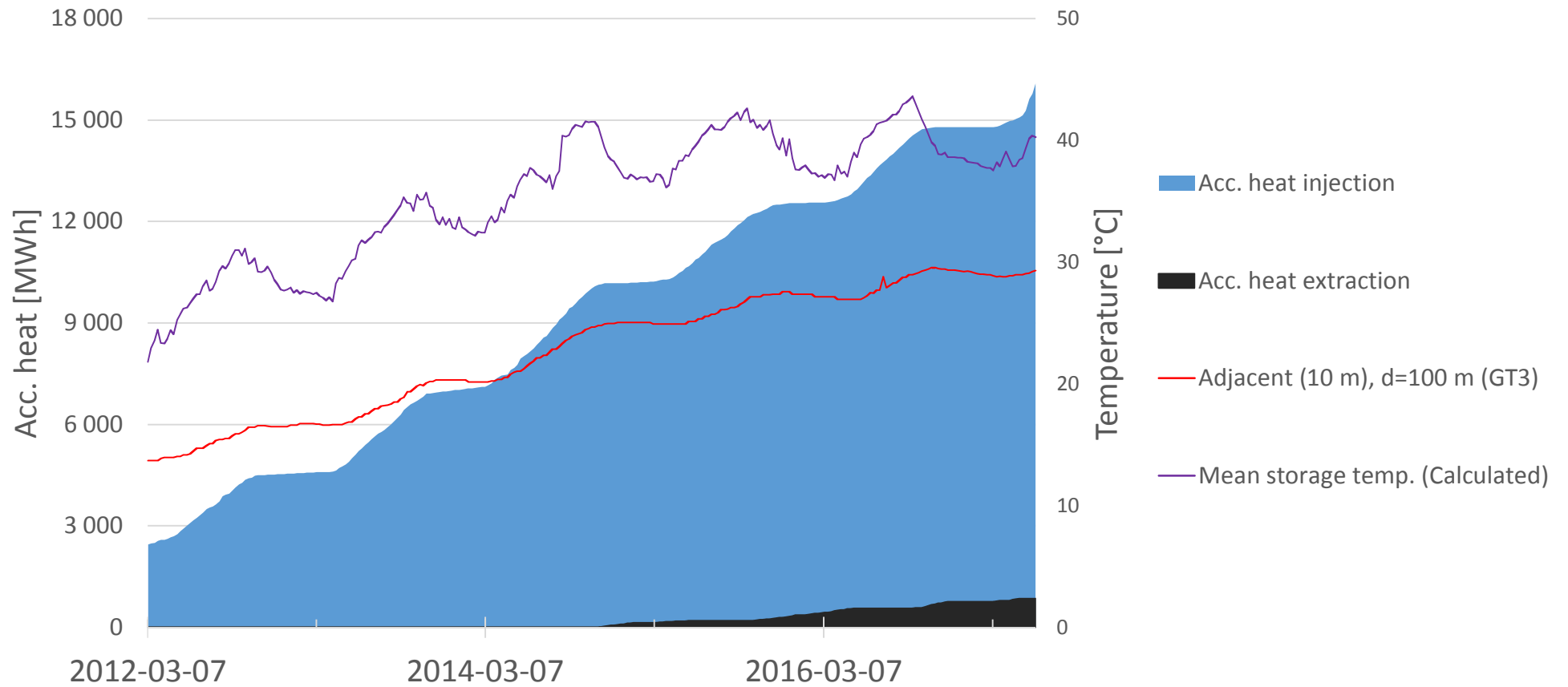
BTES-integrated heat recovery system at Xylem, Emmaboda



Internal heat distribution network



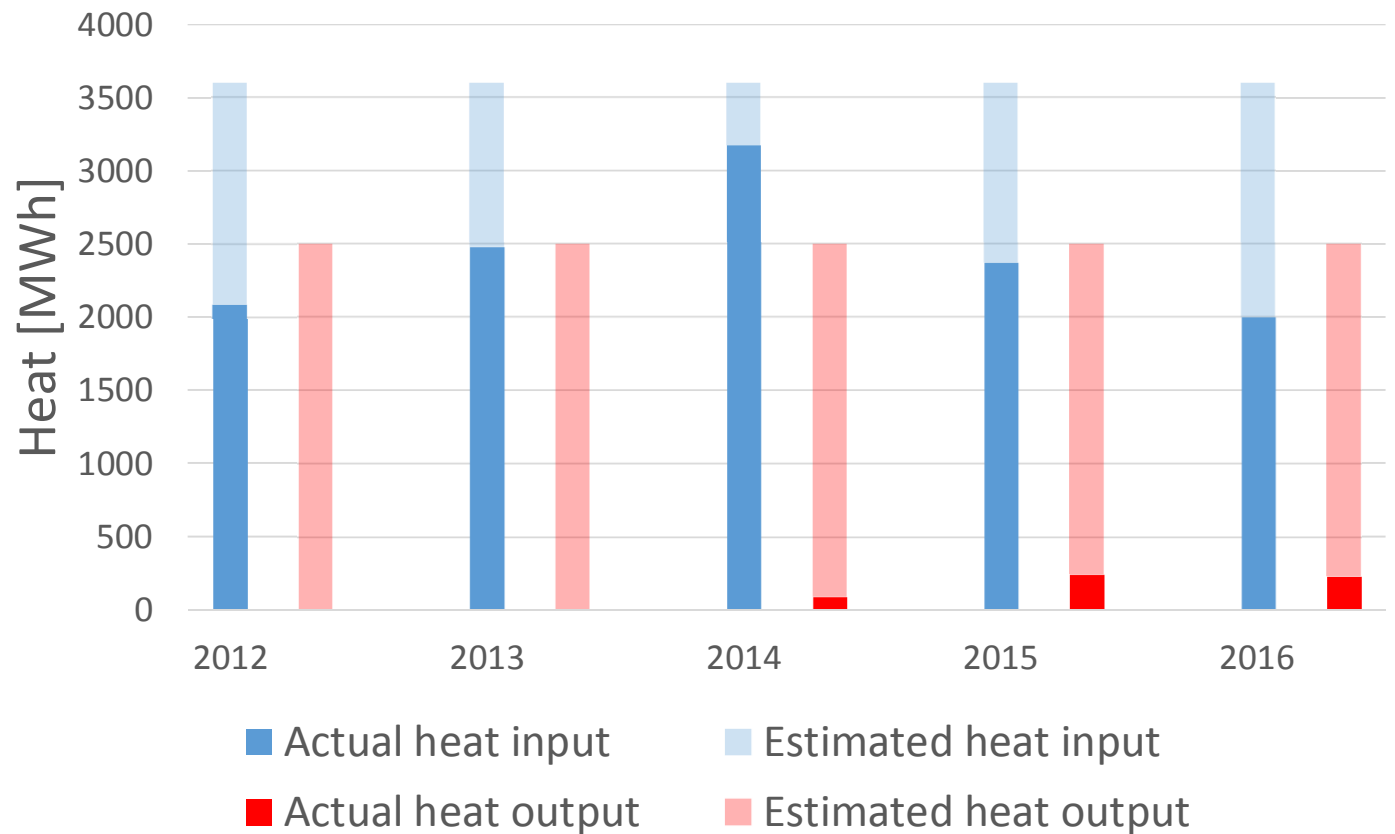
Storage outcome March 2012 – June 2017



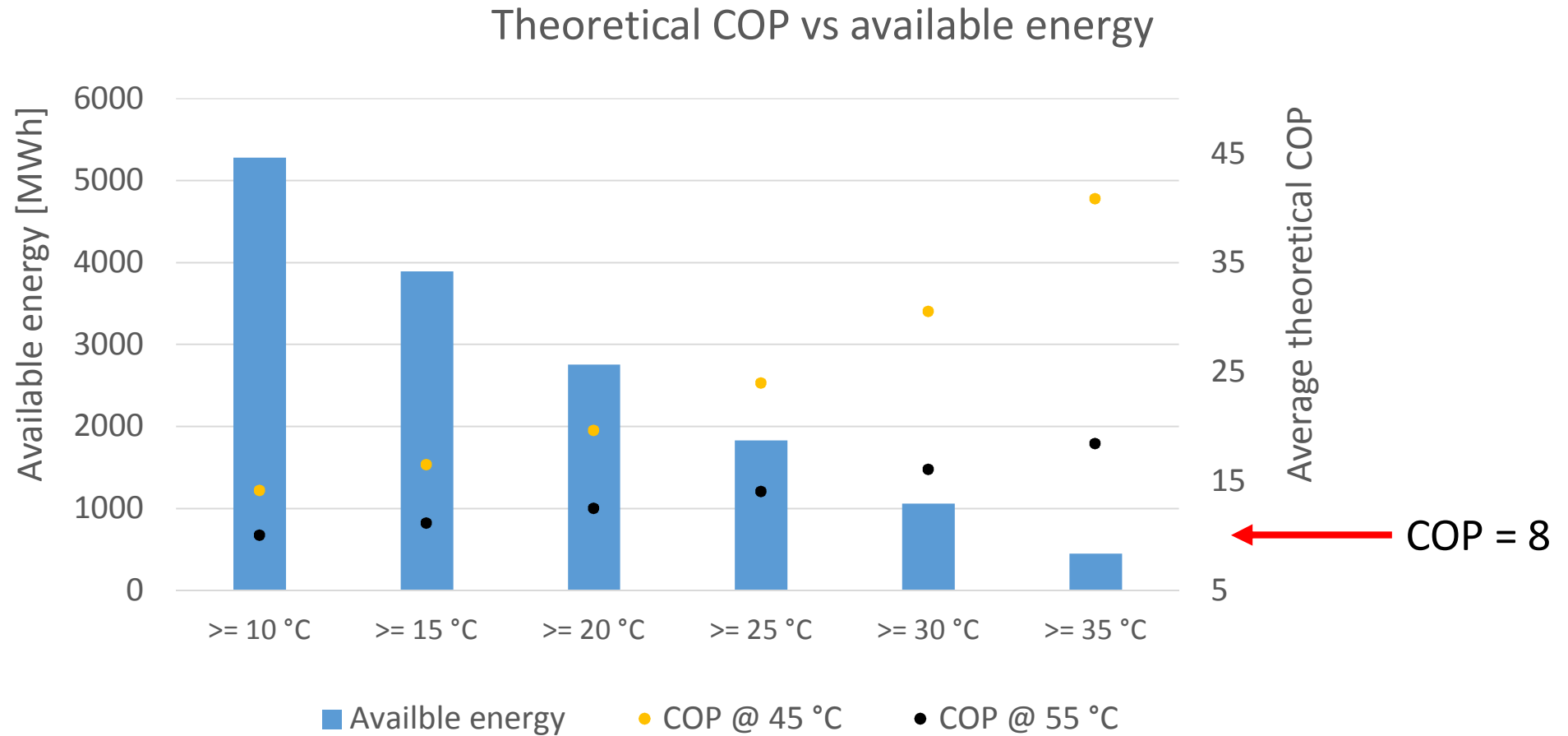
Storage outcome, further visualization

A lower than expected heat injection because of lower than calculated quantities and/or quality of the excess heat generated at the site has hindered the storage from reaching temperatures necessary for heat extraction.

Storage input & output 2012-2016



Possibilities from using a heat pump for heat extraction



Teachings/to consider

- Fine enough model, where the system is modeled as a whole - as if the BTES is connected
- Heat pump for heat extraction?
- Heat pump for heat injection?
- Designing of storage based on state of the art