

The long-term Danish energy policy aims for a fossil fuel free society by 2050. An important part of this goal is the electrification of the heating sector, using electricity from renewable energy carriers like wind and solar. An important technology for this are heat pumps, which consume electricity while producing heat.

Many industrial plants require both heating and cooling capacity for different processes. Co-generation heat pump system can deliver both with only one single unit. However, the efficiency of these is limited, due to the high temperature lift between the cold and hot process water. One possibility to improve the performance of co-generation heat pumps is the use of a storage system on the cold and hot water side. This allows for a gradual heating and cooling on the sink and source side, respectively, and thereby leads to a lower average temperature lift and a higher coefficient of performance (COP).

The project aim is to build thermodynamic models in EES (Engineering equation solver) for different heat pump configurations and for the tanks on the hot and cold side of the heat pumps. With the help of these models, the influence of different parameters, the technical feasibility and the performance of the system shall be investigated. For more information please contact René Kofler ([renekof@mek.dtu.dk](mailto:renekof@mek.dtu.dk))

