



Campagne District - Innsbruck

IEA HPT A 61, IEA SHC T 66, IEA EBC A 83
2023-05-15, Chicago, IEA HPC

Fabian Ochs, Assoc. Prof. Dr.-Ing.



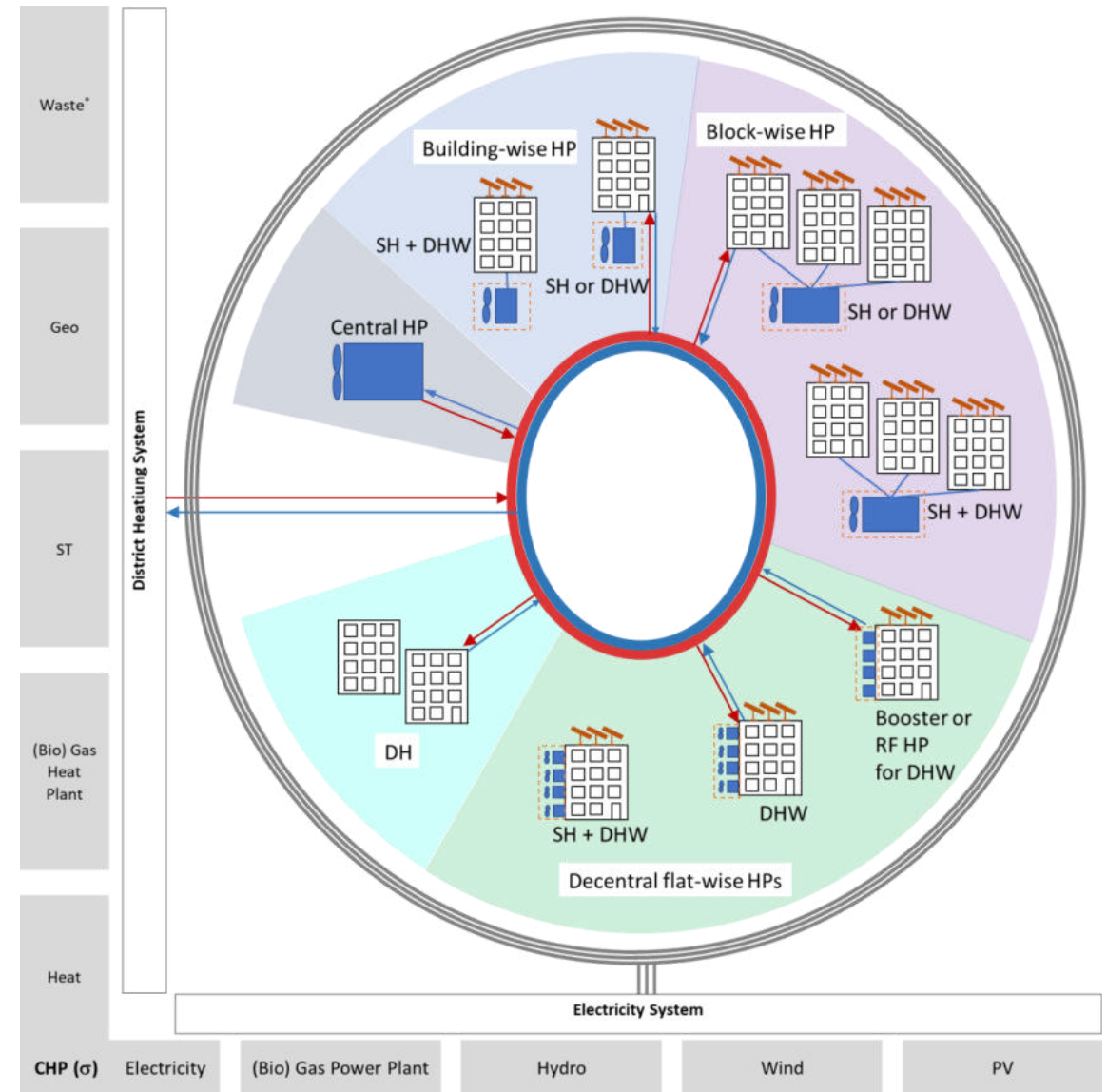
Integration of HPs - Options

- Building-level integration
 - Central (Building/Block-wise)
 - Decentral (Flat-wise)
- District Heating H-level (large-scale high temperature HP)

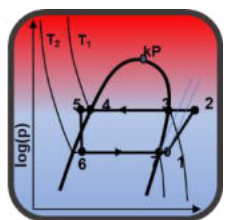
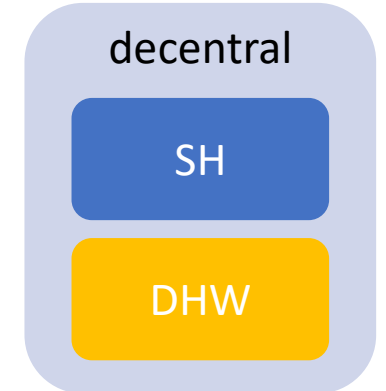
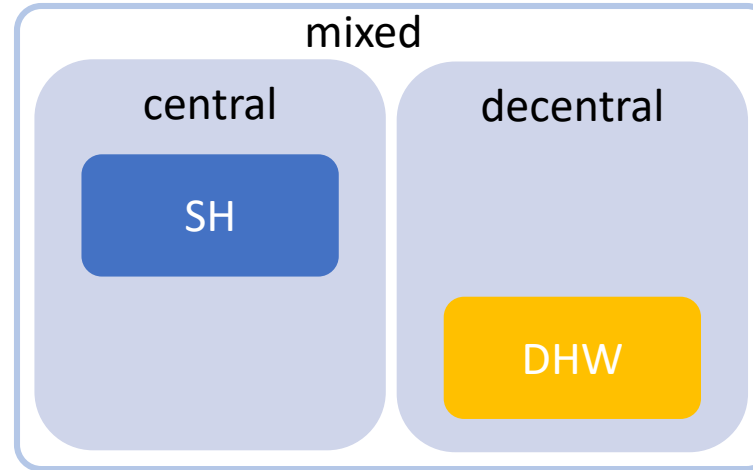
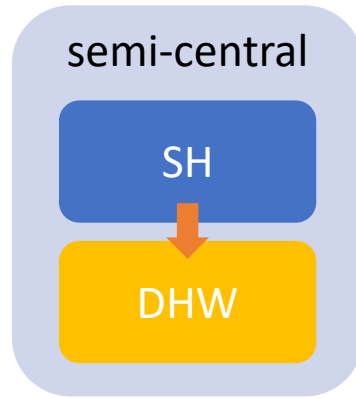
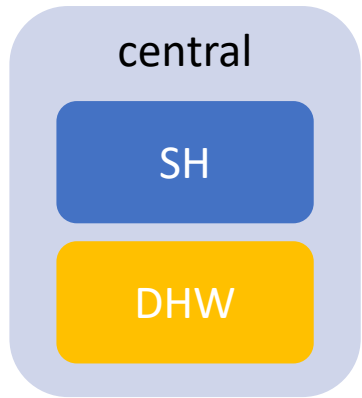
Sector Coupling: Electricity, Heat (& Mobility)

Ochs, Fabian; Magni, Mara; Dermentzis, Georgios; Integration of Heat Pumps in Buildings and District Heating Systems— Evaluation on a Building and Energy System Level, Energies 2022, 15(11), 3889; <https://doi.org/10.3390/en15113889>

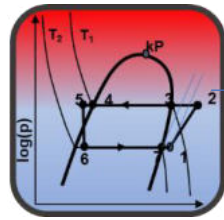
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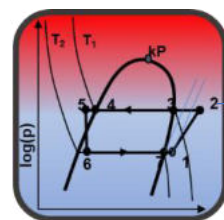
Heat Pump System Options – Building Level



- SH + DHW
- SH + DHW
- SH + DHW
- SH + DHW



- SH
DHW
- SH
DHW
- SH
DHW
- SH
DHW



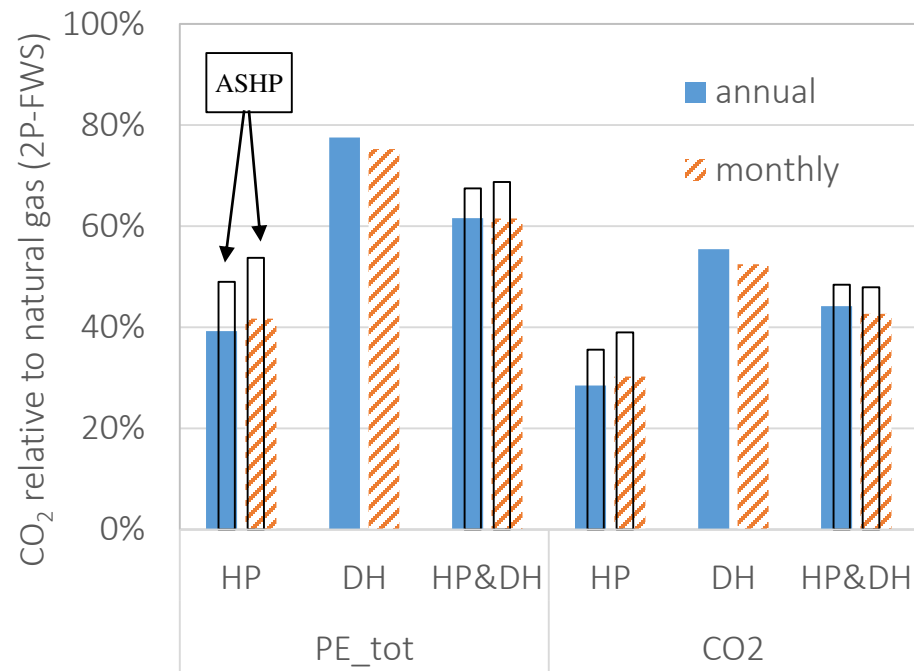
- SH
DHW
- SH
DHW
- SH
DHW
- SH
DHW

- SH + DHW
- SH + DHW
- SH + DHW
- SH + DHW

Dermentzis, Georgios; Magni, Mara; Ochs, Fabian; Monteleone, William; Schaffer, Benjamin; Heat Pump Solutions in Renovations of Multi-Storey Buildings; CLIMA 2022 conference

New District Innsbruck Campagne

- Ground Water HP for SH
- District Heating for DHW



Dermentzis, Georgios; Ochs, Fabian; Thür, Alexander; Streicher Wolfgang,; Supporting decision-making for heating and distribution systems in a new residential district - an Austrian case study, Energy, Elsevier, 2021

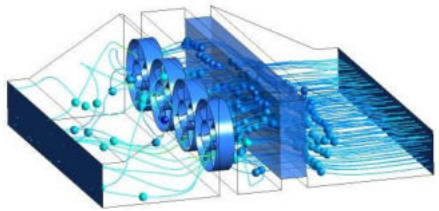
Passive House Quality, 1200 flats in 16 buildings in 4 blocks



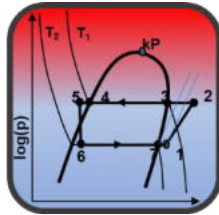
(left) Campagne Areal, (right) Block I (NHT, IIG)

Optimisation – From District Level to Component Level

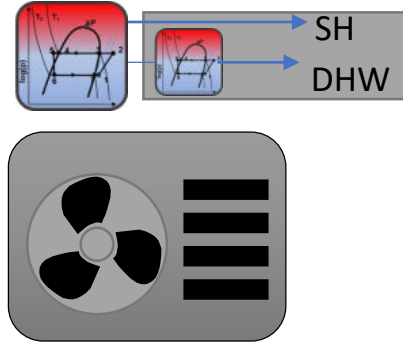
Heat Pump in Districts



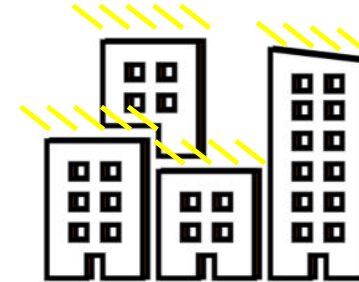
Component Level
Compact evaporator
(CFD Simulation +
Experiments)



Refrigerant cycle
R290 HP
(Simulation + Experiments)



Heat pump and HP System
Booster-HP
(Simulation + Experiments)



Building/Block Level
Building with RE
(Simulation, Monitoring,
Demo)q



District/City
District Heating
(Scenario, Energy
Policy)