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Fachbereich Energie · Gebäude · Umwelt

A comparative study of open-source district heating modeling tools.

VS.

DHNx implemented in the SESMG



Thermos – A Horizon 2020 project



Background map © OpenStreetMap contributors



Testcase & Method



Test sub-urb considered within the comparative study Background map © OpenStreetMap contributors

Sub-urb building types:

- 3 commercial building
- 38 multi-family building
- 28 single-family building

In Herne-Baukau North Rhine-Westphalia.

Method:

- Thermos' optimization procedure is adapted within DHNx/SESMG
- Parameters are adjusted as far as possible

Optimization procedure:

- 1. Network-problem
- 2. Supply-problem



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1. Testcase & Method

- 2. Results
- 3. Comparison



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1. Testcase & Method

- Results 2.
- Comparison 3.



- Heat source
- street

Colors:

- not dimesionated / connected to network in both algorithms
- dimensionated / connected to network in Thermos
- dimensionated / connected to network in both algorithms



Comparison

property	Thermos	DHNx/SESMG
Computational time	seconds – minutes	minutes - hours
Customizability		
- time horizon	$\left(\times\right)$	\bigcirc
 simultanity factor 	$\left(\times \right)$	\bigtriangledown
 variable cost patterns 	\bigcirc	\bigotimes
- GHG emissions	cumulated per kWh	detailed
(plants)		
- GHG emissions	$\left(\times\right)$	\bigcirc
(pipes)		

 \rightarrow DHNx as "winner" due to the higher customizability, although this is bought by the weakness of the higher computing time

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Questions? Feel free to ask one of us.



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