

## Campagne: Demonstration project towards PED

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# New District Campagne Areal

## Campagne Areal:

- 4 blocks
- ca. 1100 flats in 16 buildings
- ca. 78000 m<sup>2</sup>

## End of use:

- Residential
- Service facilities
  - Shops
  - Cafes
  - School
  - Kindergarten
  - Sport facilities



IIG, NHT

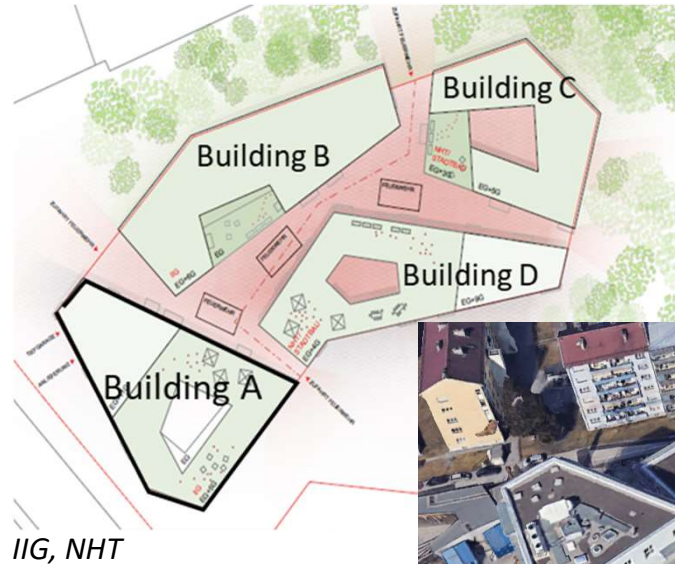


*expressiv für Bogenfeld Architektur*

# New District Campagne: Block 1

## Block 1:

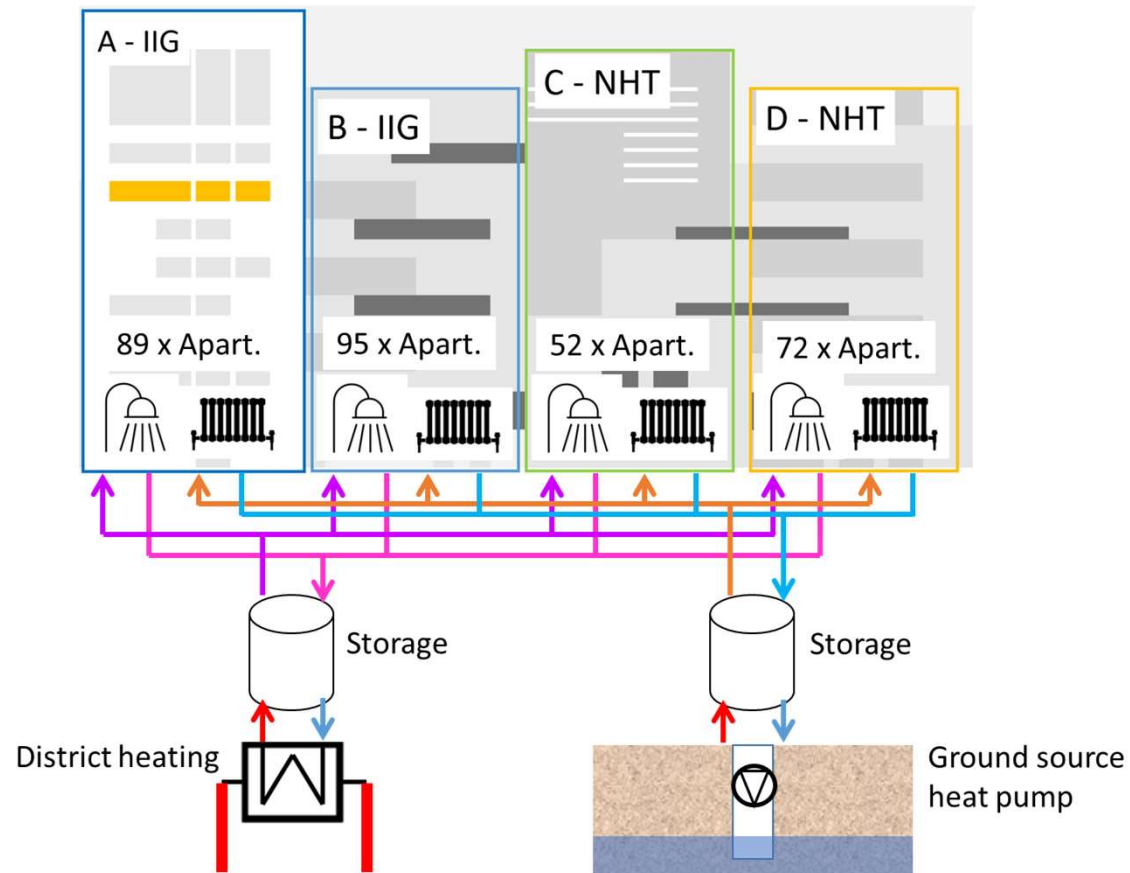
- 307 flats in 4 buildings
- 22277 m<sup>2</sup>
- Space heating demand (PHPP):  
15 – 21 kWh/(m<sup>2</sup> a)
- MVHR
- Central block heating system  
(ground heat pump + city district heating)
- PV on 3 roofs



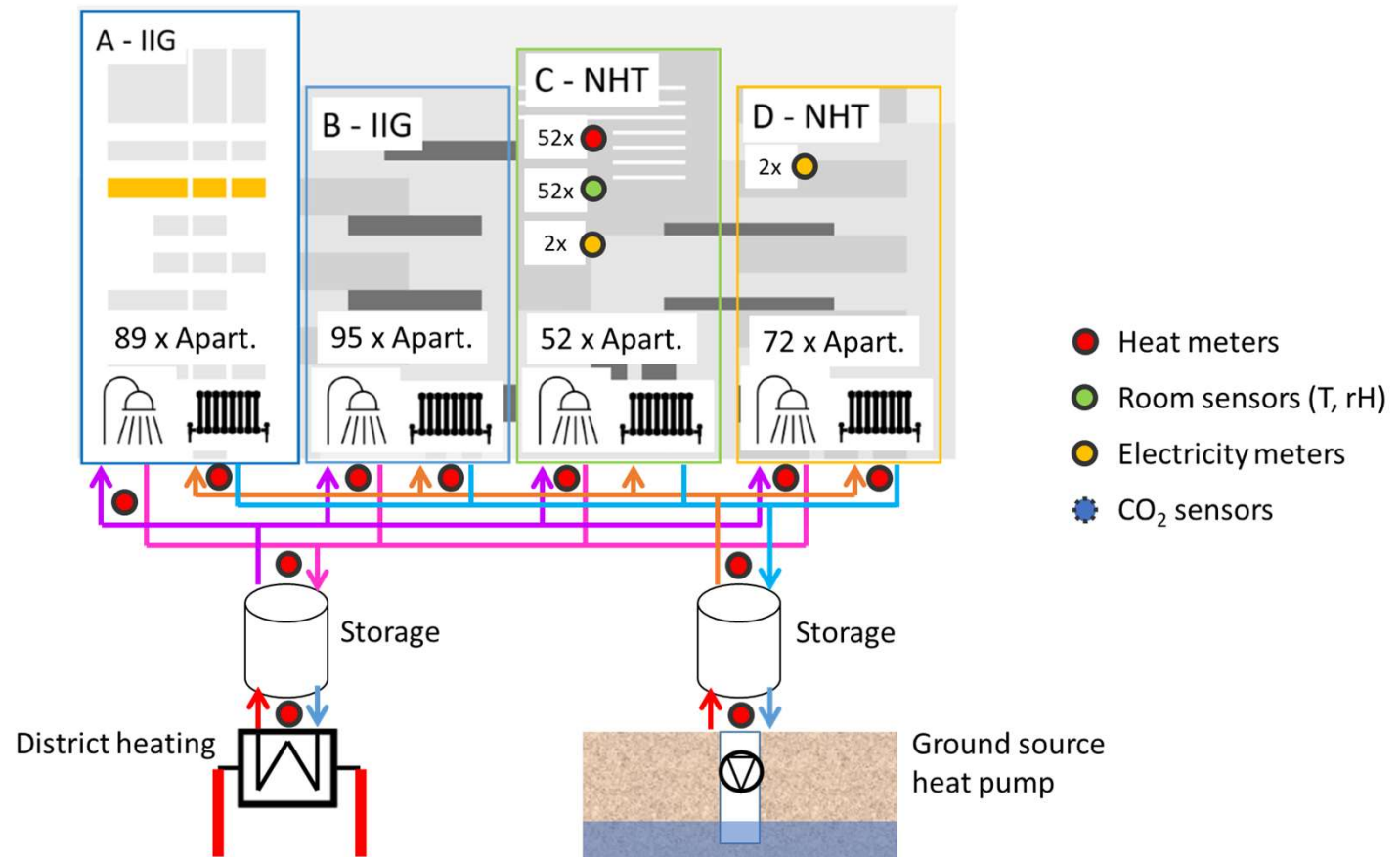
Google Earth



# Hydraulic system



# Monitoring concept



# Activities

## What has already been done:

### Monitoring:

- Automatic verification of the monitoring data
- Comfort in the apartments (T, rH)
- Thermal losses due to SH and DHW distribution
- SH and DHW energy demand
- Efficiency of the heat pump

## What is planned to be done:

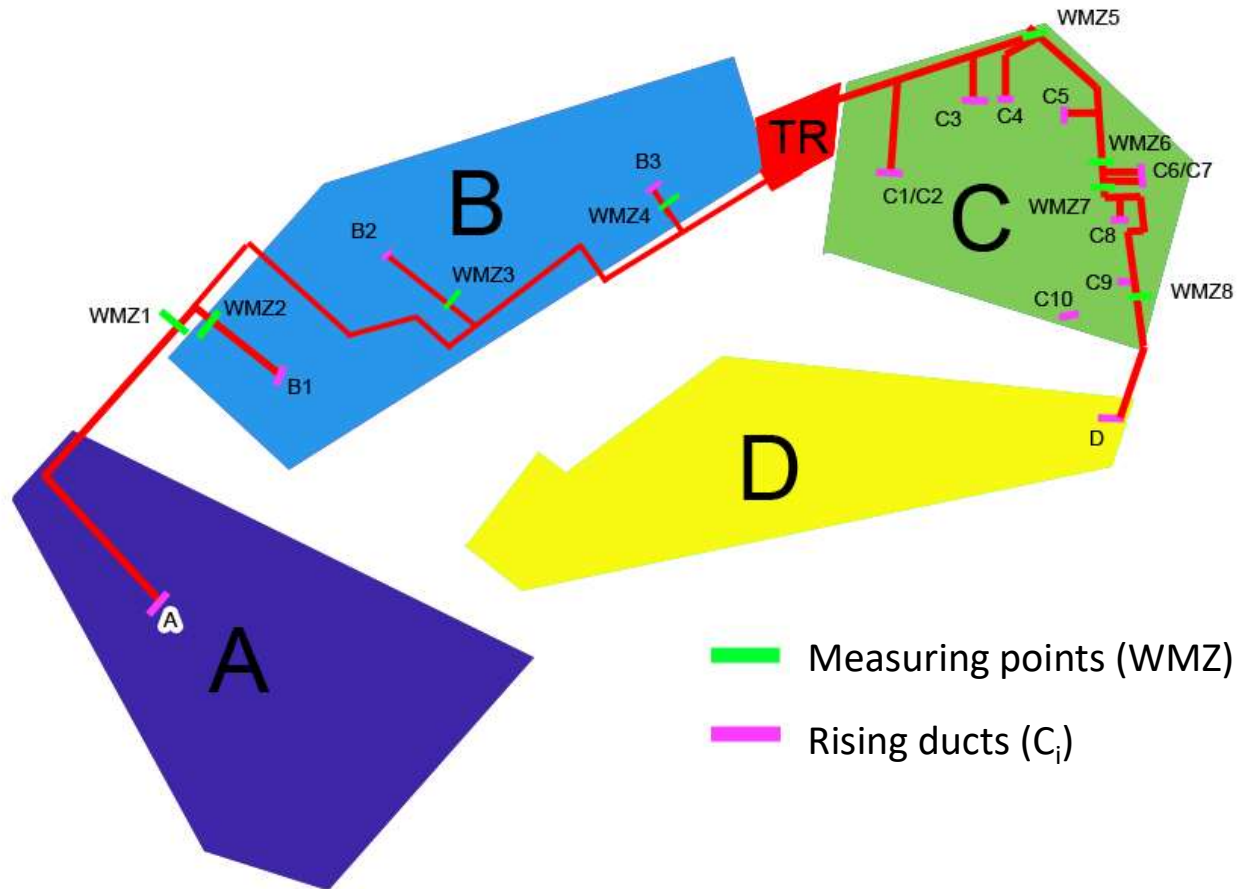
### Monitoring:

- DHW profiles (simultaneity factor, standard profiles)
- Efficiency of the district heating

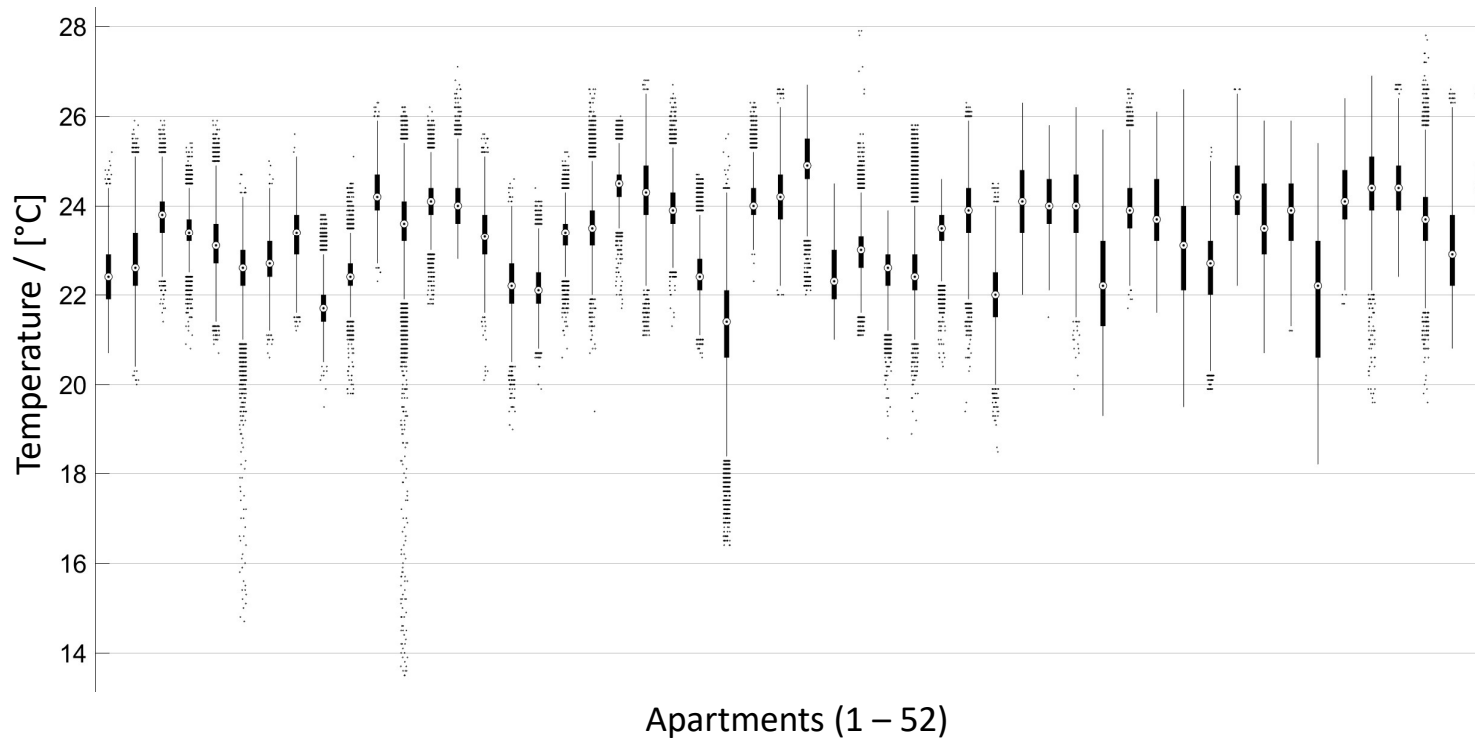
### Simulation

- Calculation of the pipe losses and comparison with monitoring data
- Validation of the simulation model by means of monitoring data
- Concepts comparison (DH, HP, combination)
- LCA
- Control (FH)
- PV potential towards PED

# Overview plan of the pipes



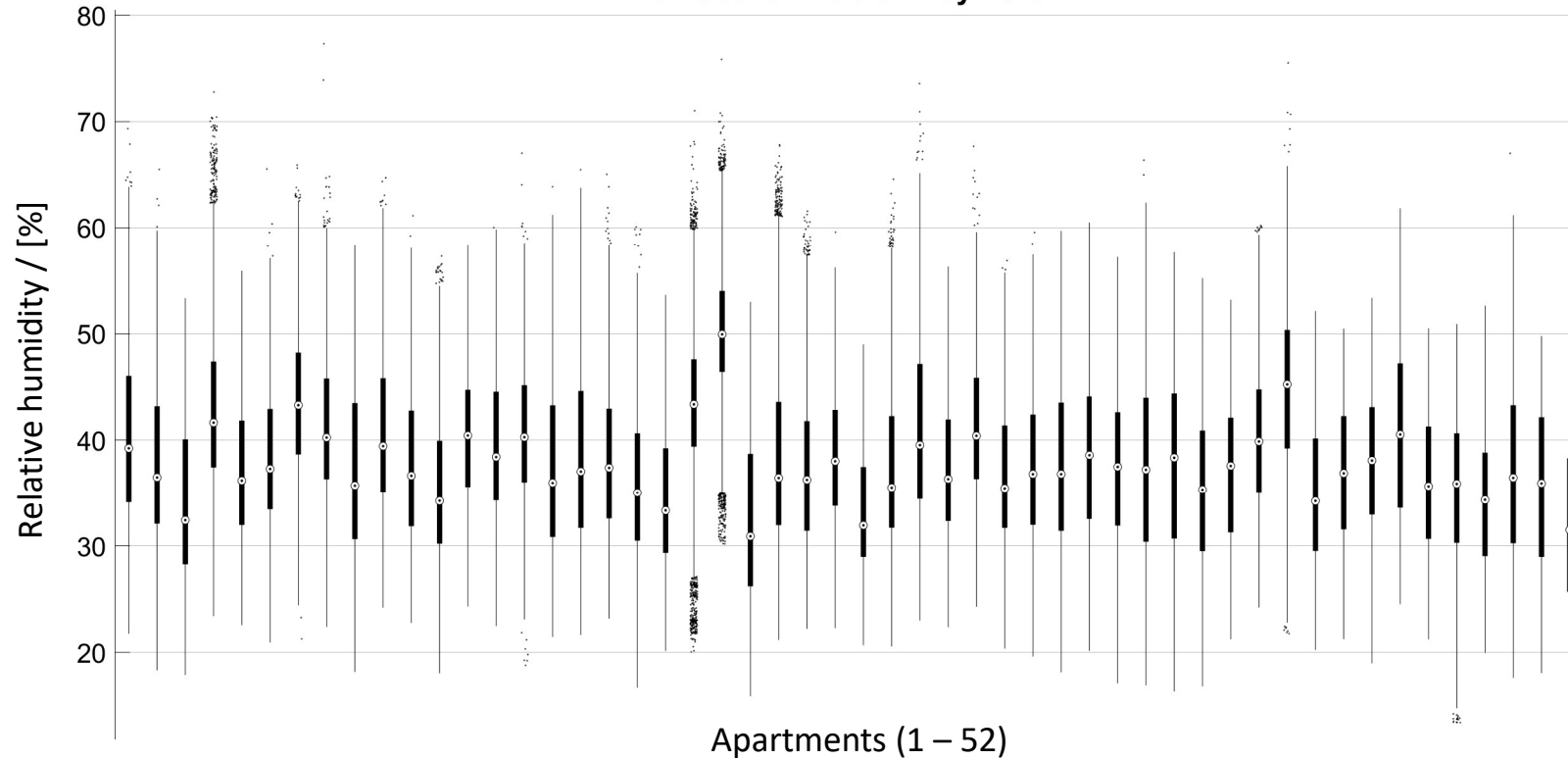
# Temperature in the apartments (Winter 2022-2023)



*Plots generated for: Summer 2022, Winter 2022/2023, Summer 2023.  
For sake of simplicity only plots from Winter 2023 are shown.*

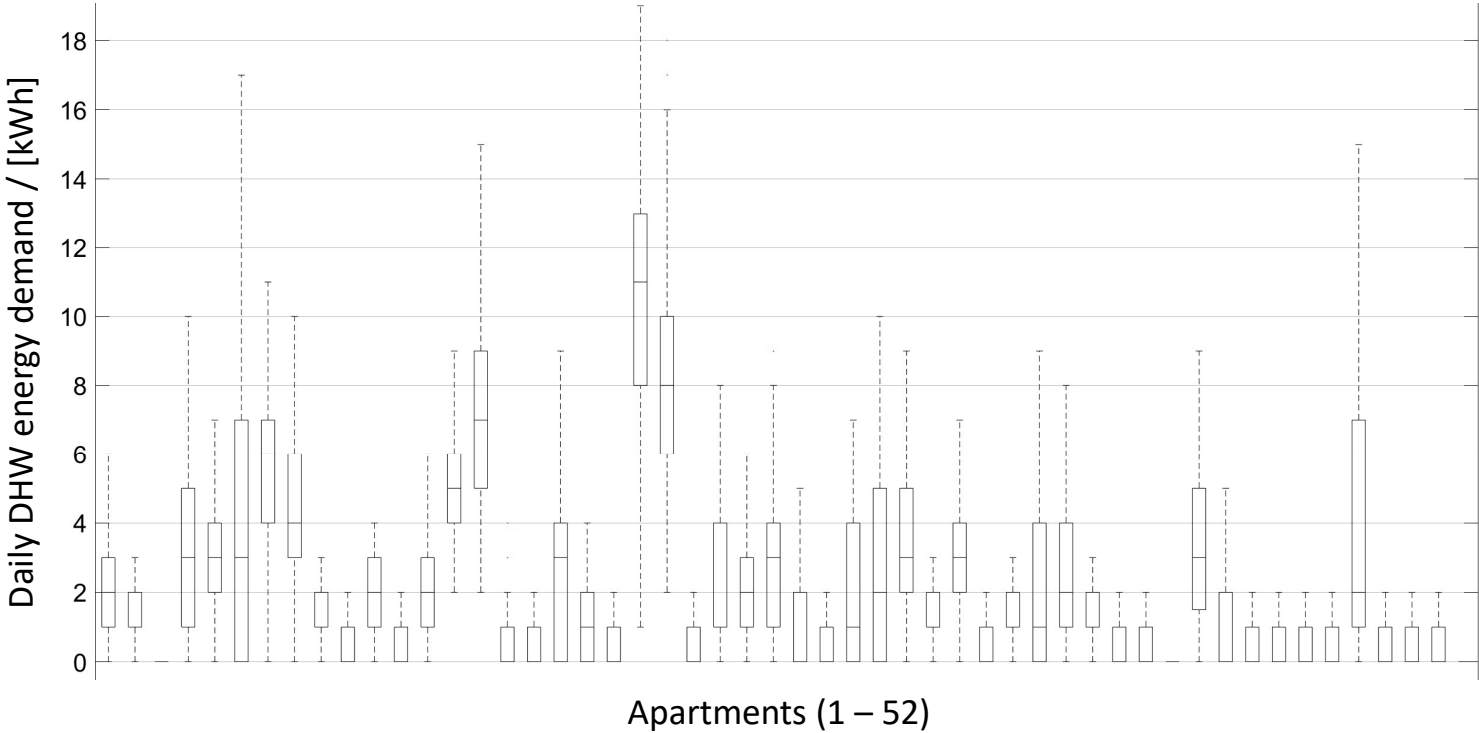


# Relative humidity in the apartments (Winter 2022-2023)



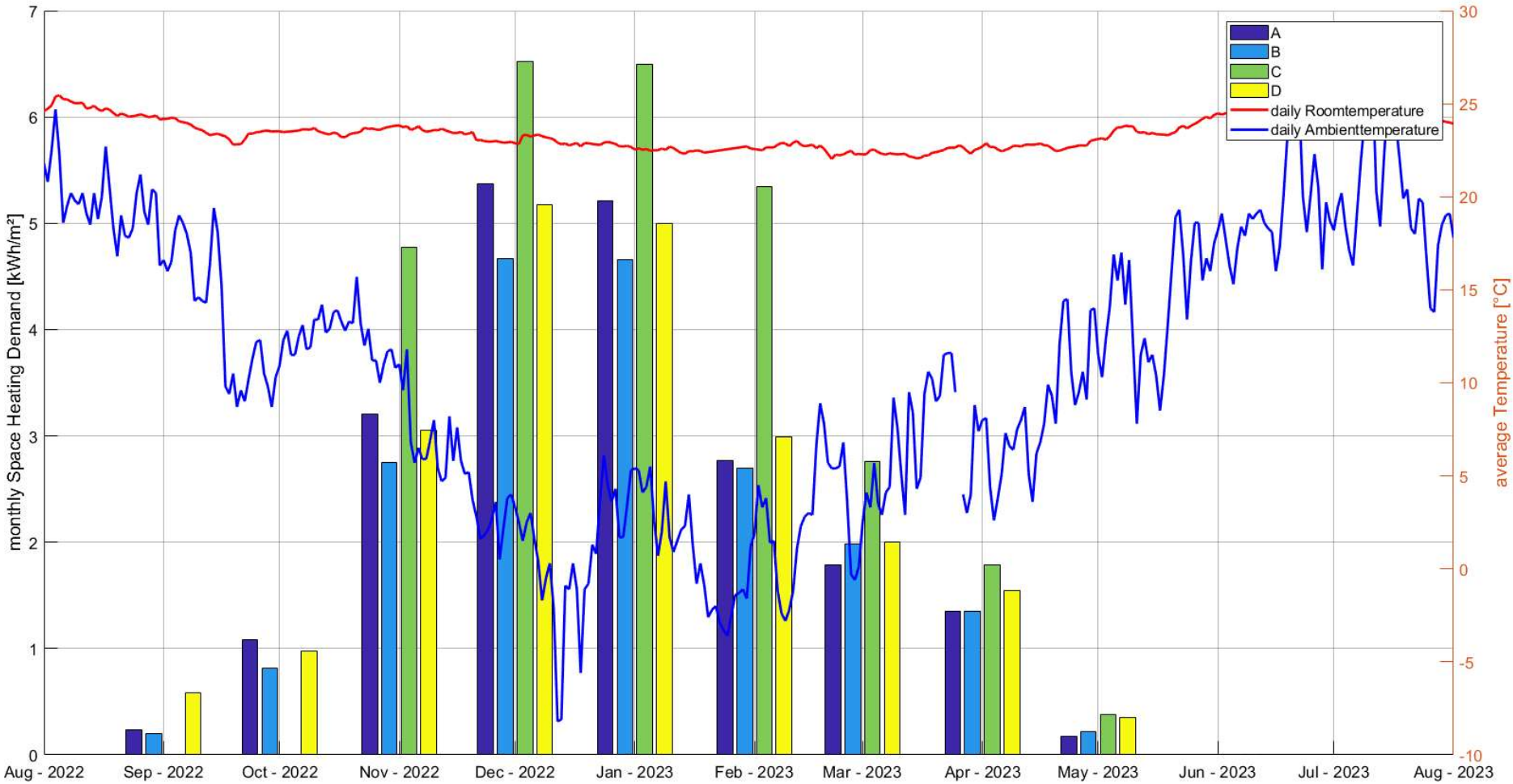
*Plots generated for: Summer 2022, Winter 2022/2023, Summer 2023.  
For sake of simplicity only plots from Winter 2023 are shown.*

# Daily DHW in the apartments (Winter 2022-2023)



*Plots generated for: Summer 2022, Winter 2022/2023, Summer 2023.  
For sake of simplicity only plots from Winter 2023 are shown.*

# Space heating demand



# Space heating demand

Space heating demand [kWh/(m<sup>2</sup>\*\*)]

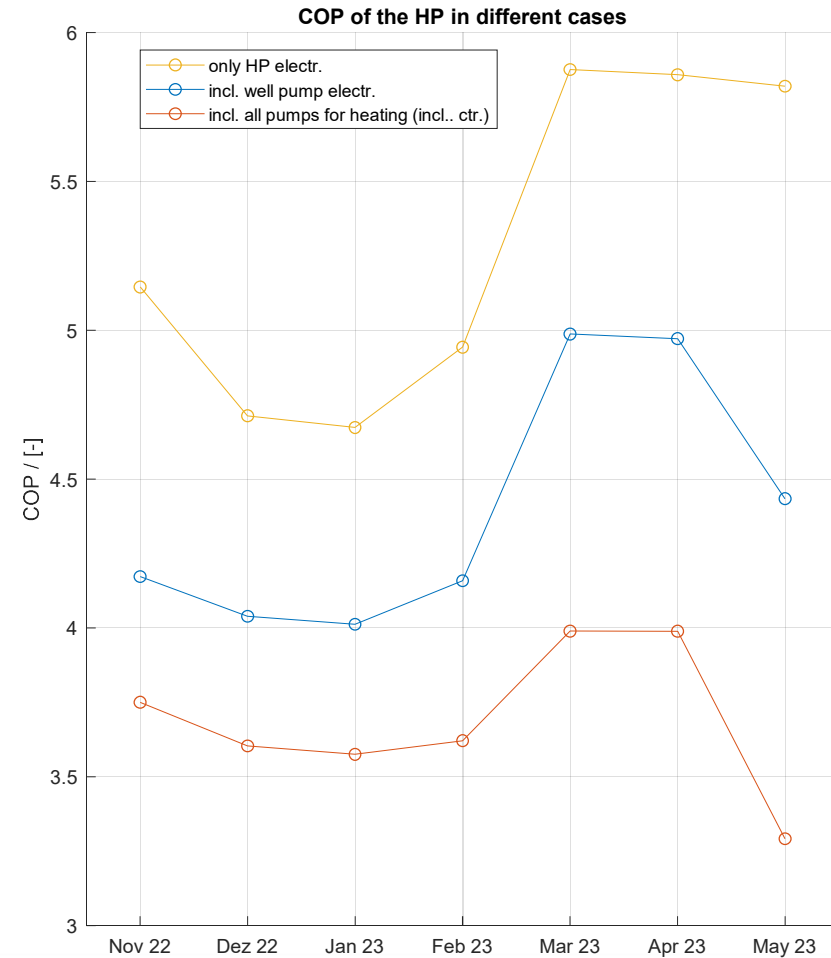
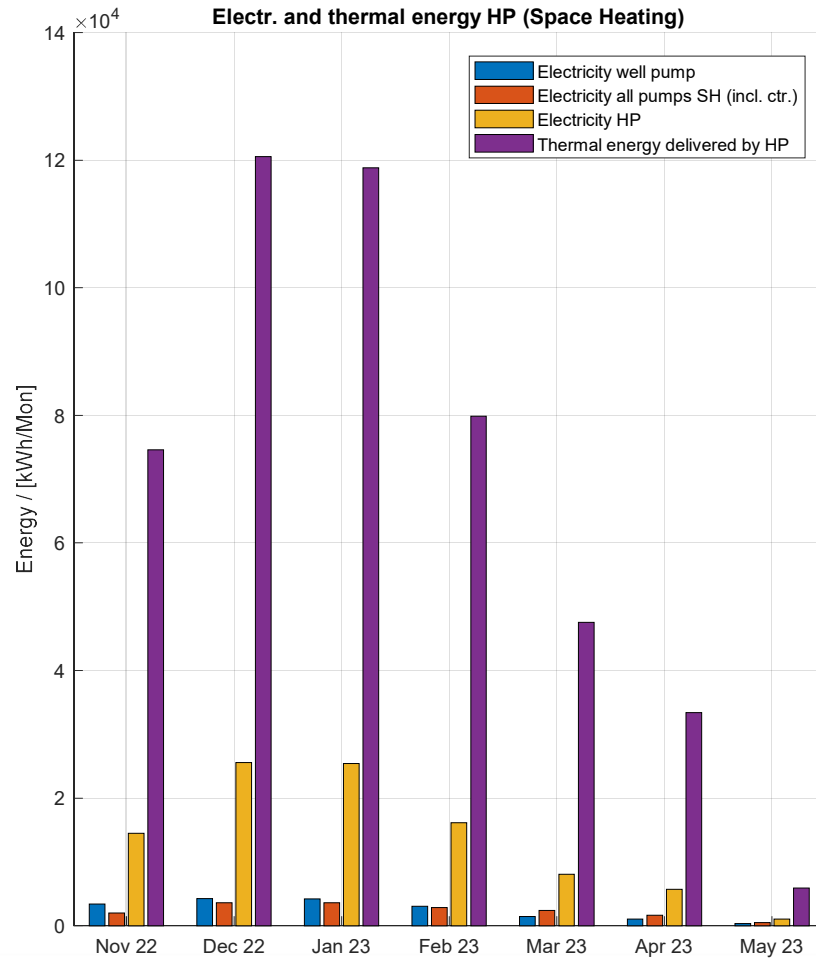
	2022				2023								Sum	PHPP
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug		
<b>A</b>	0.2	1.1	3.2	5.4	5.8	3.3	1.8	1.3	0.2	0.0	0.0	0.0	<b>22.3</b>	<b>15.0</b>
<b>B</b>	0.2	0.8	2.8	4.7	5.1	3.2	2.0	1.4	0.2	0.0	0.0	0.0	<b>20.2</b>	<b>15.0</b>
<b>C'</b>	0.0	0.0	4.8	6.5	5.8	4.6	2.8	1.8	0.4	0.0	0.0	0.0	<b>26.6*</b>	<b>21.3</b>
<b>D</b>	0.6	1.0	3.1	5.2	5.5	3.5	2.0	1.5	0.3	0.0	0.0	0.0	<b>22.6</b>	<b>18.3</b>

	Number of apartments	Number of apartments PHPP 2022
Building A	89	89
Building B	95	97
Building C	52	53
Building D	71	76

\* C' = C + pipe losses for C + D

\*\* TFA from PHPP, Room temperature = 20°C

# Heat pump (space heating)





# Study: solar potential

Ongoing study

Required PV panels to reach PED

- Evaluation of the available PV area (different steps)
- Evaluation of the energy balance (monthly)
- Simulations

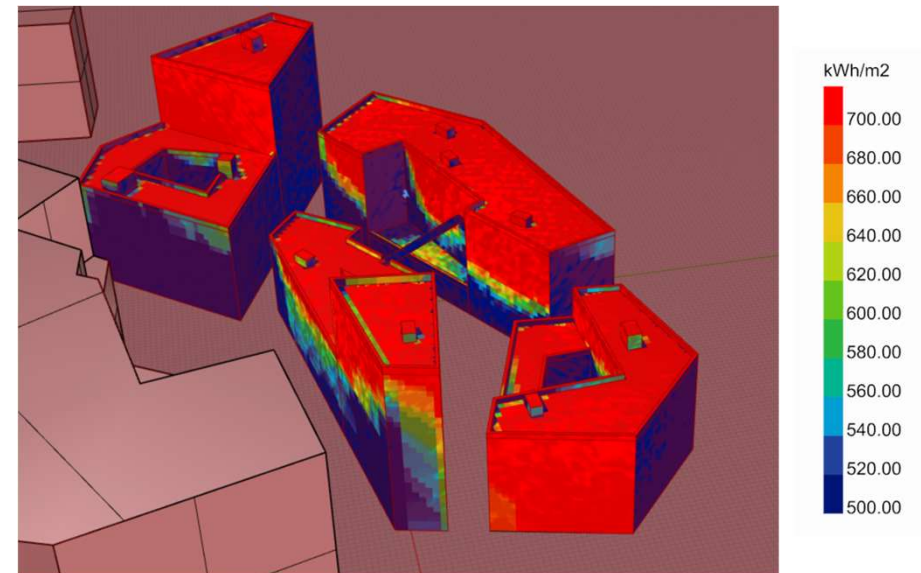
Bachelor thesis (Simon Heiß, UIBK)



# Study: solar potential

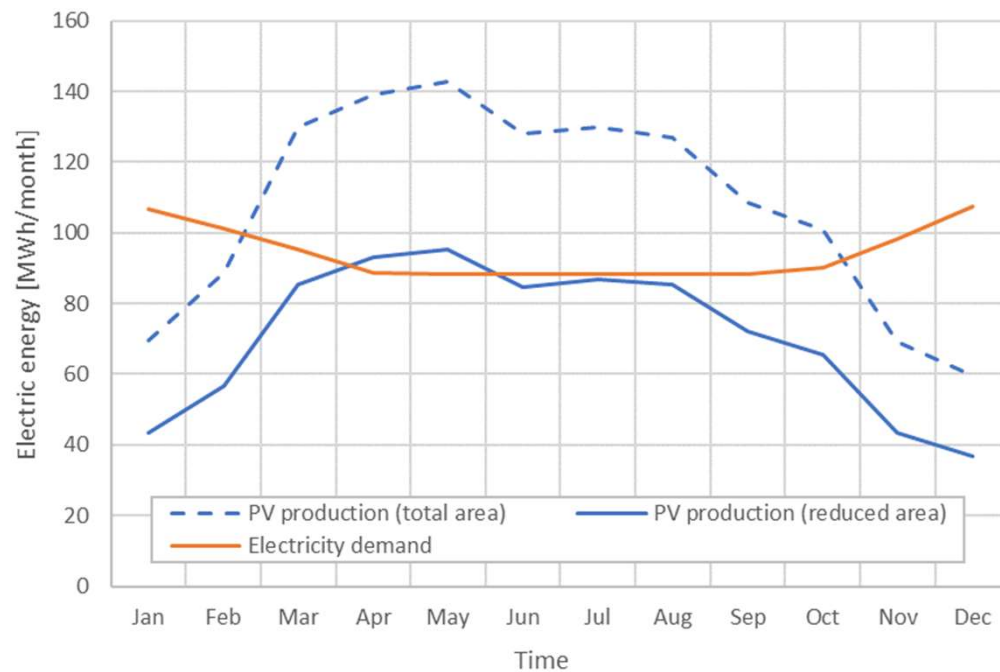
Area / [m<sup>2</sup>]

	Facades	Roofs
<b>Total</b>	16430	4798
<b>(ideally) available</b>	11175 (68%)	2841 (59%)
<b>Reduced (shadings)</b>	2164 (13%)	2658 (55%)
<b>Real PV panels</b>	...	...



# Study: solar potential

## Preliminary results for Block 1 (4 buildings)



Herz & Lang GmbH



Thank you!