



# Demonstratie- project Hybride warmtepompen in de gebouwde omgeving



# **Meten = Weten**







# Locaties meetapparatuur en data

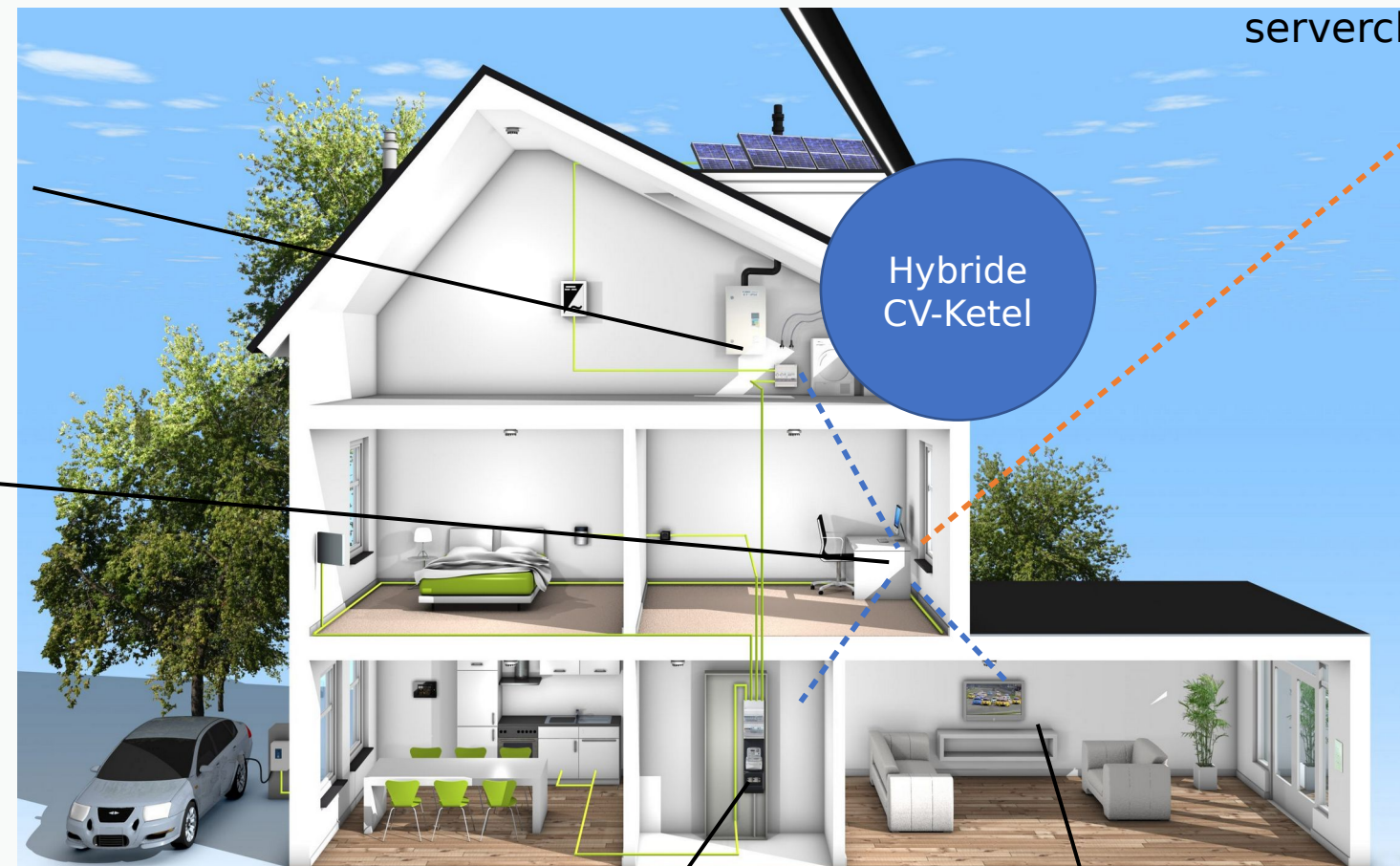
Locatie 1: Meting energie-opname  
verwarming en elektrische opname  
HR ketel en hybride warmtepomp

Data naar  
servercluster

Locatie 2: MiFi router

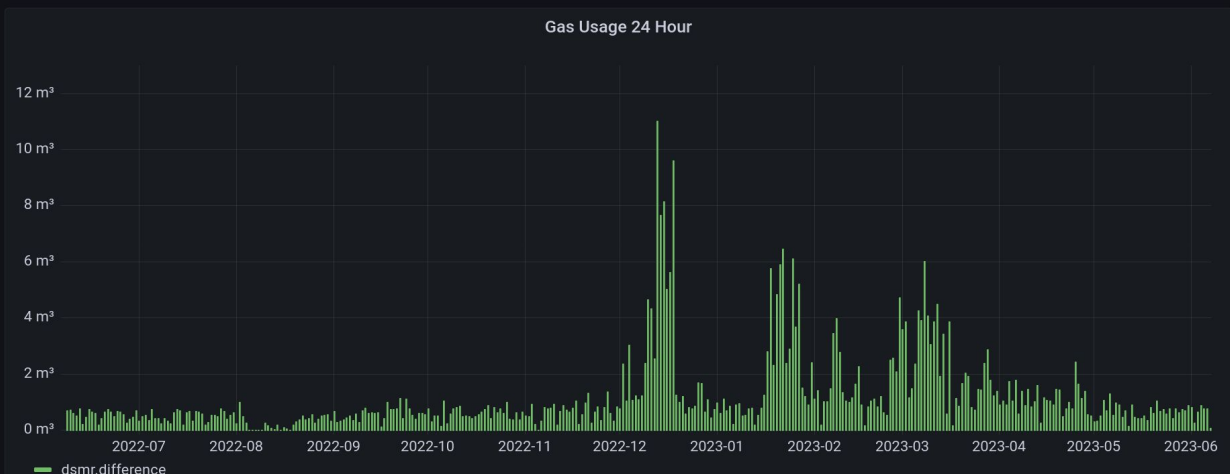
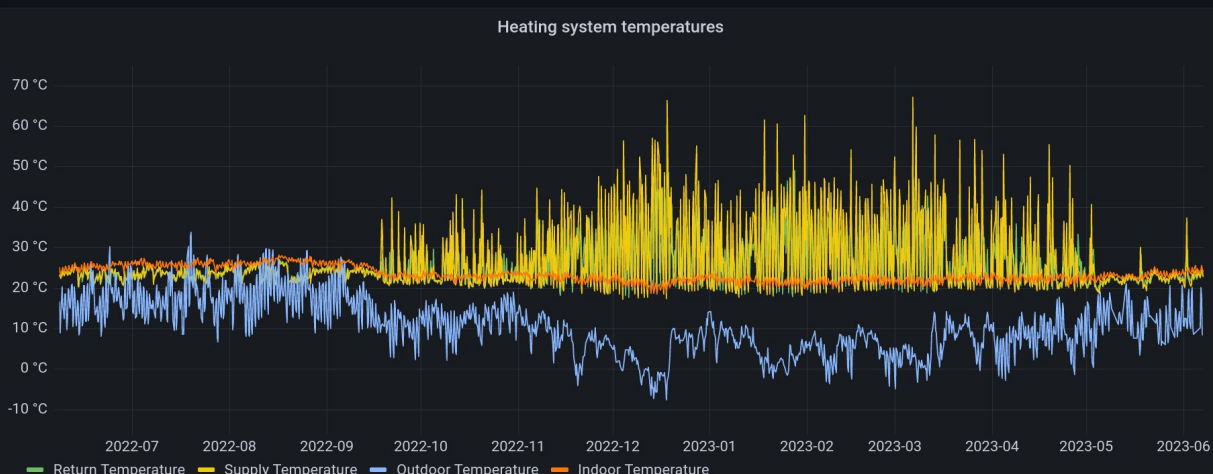
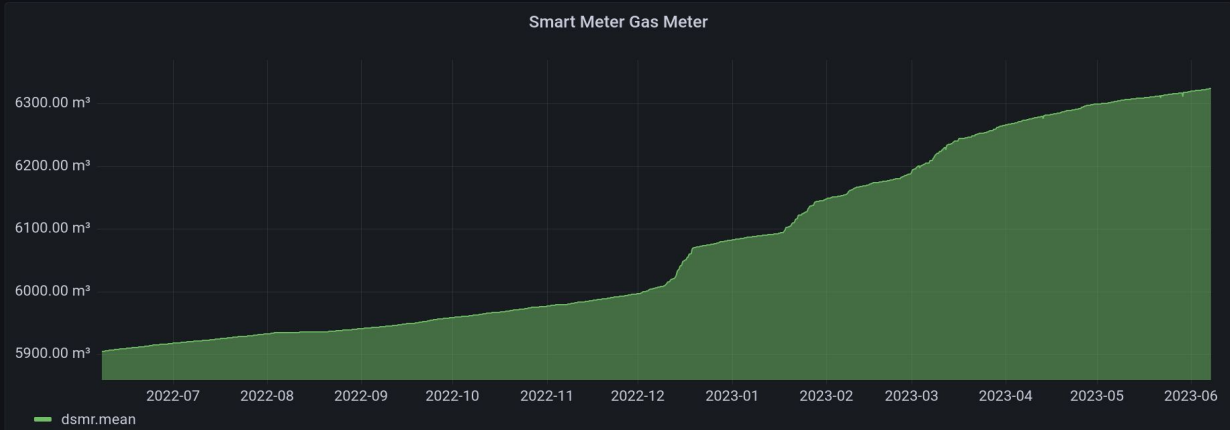
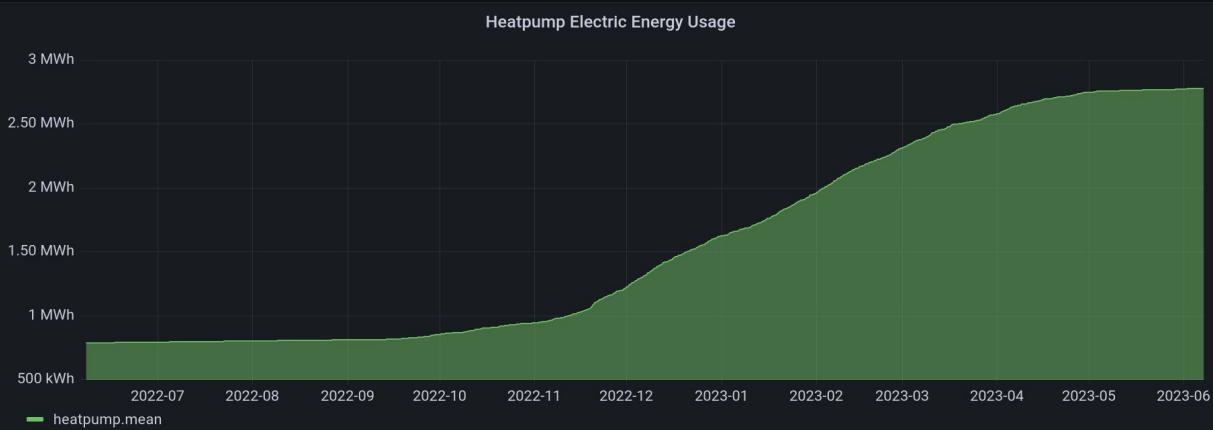
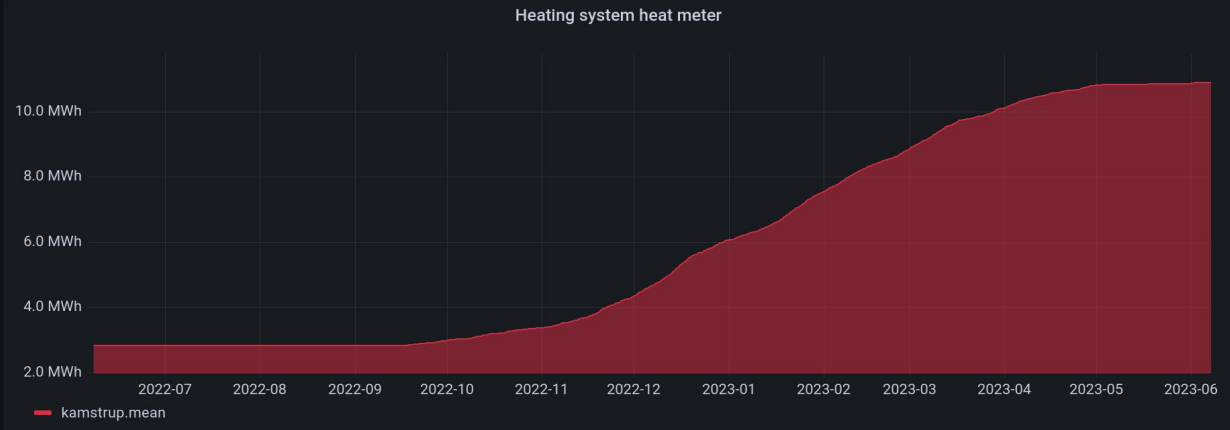
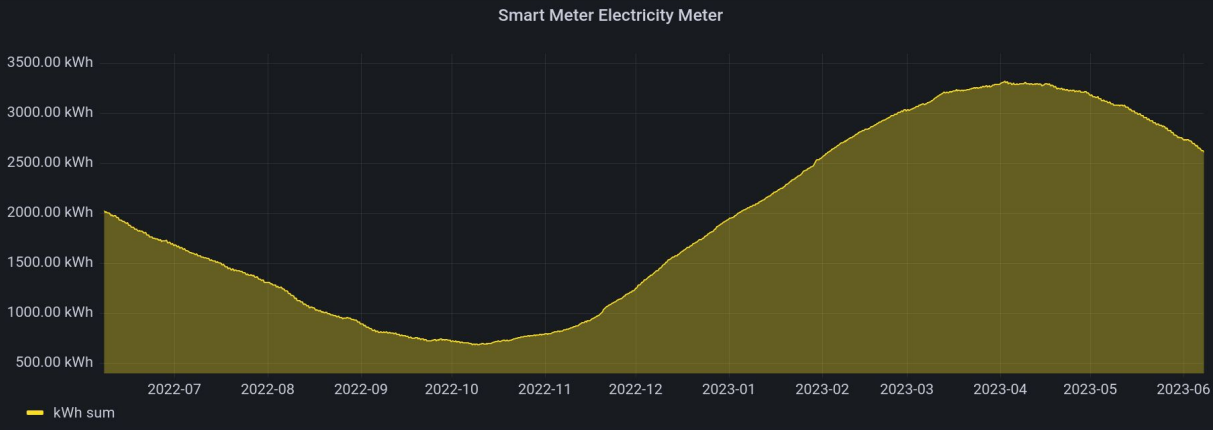
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LTE 4G

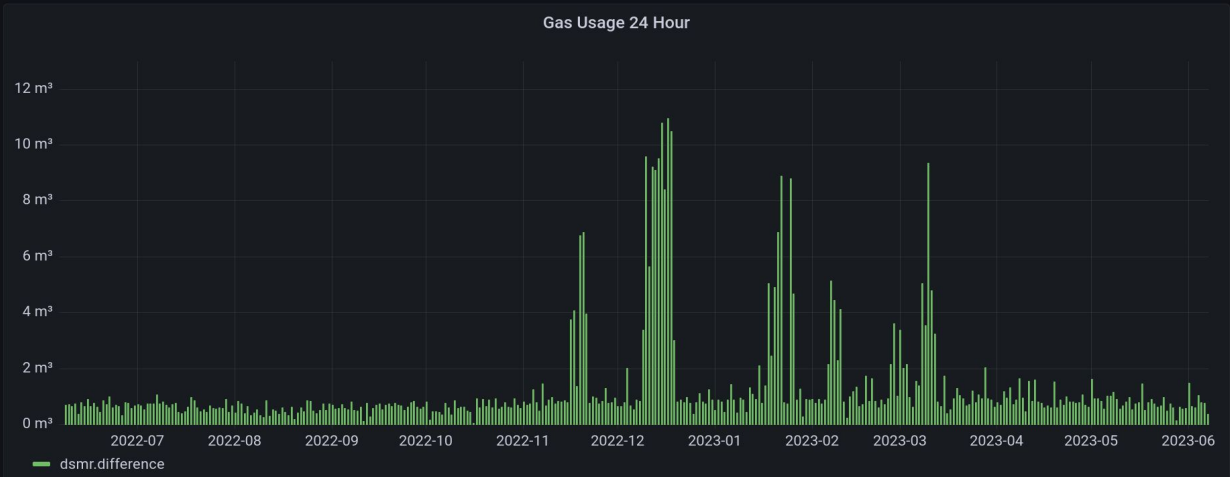
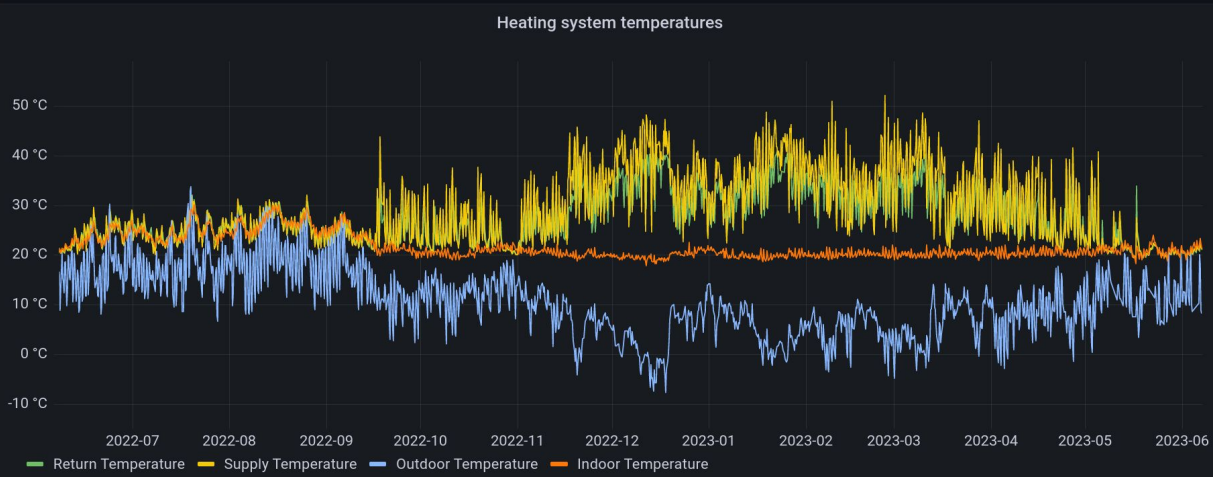
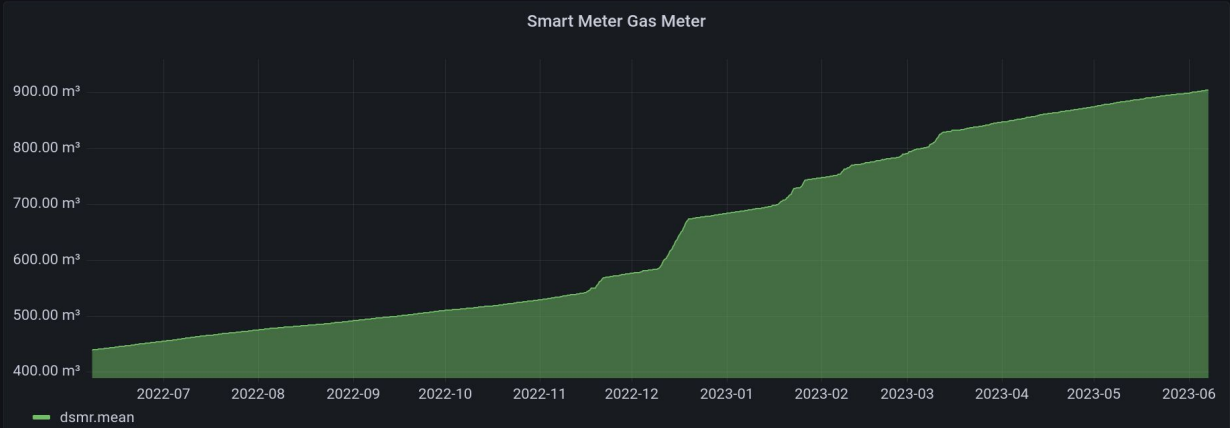
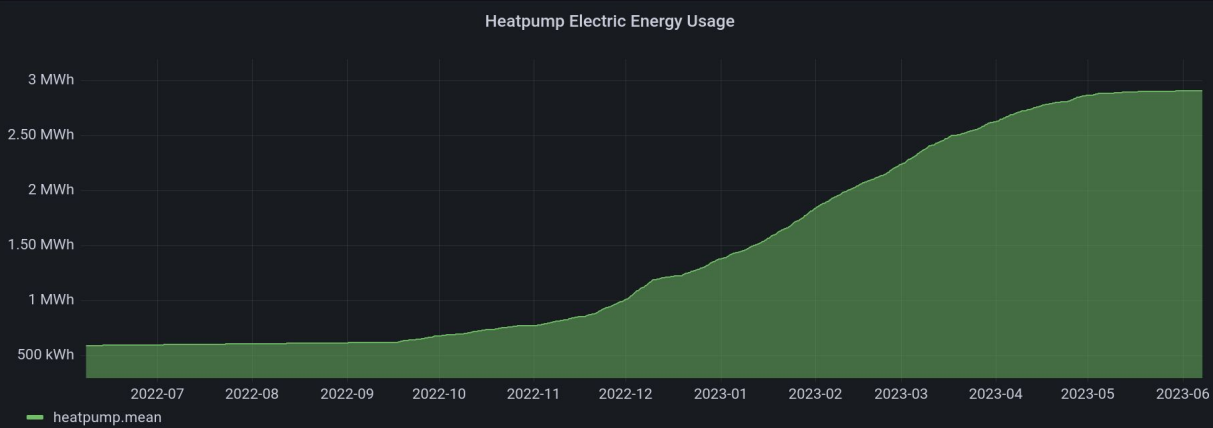
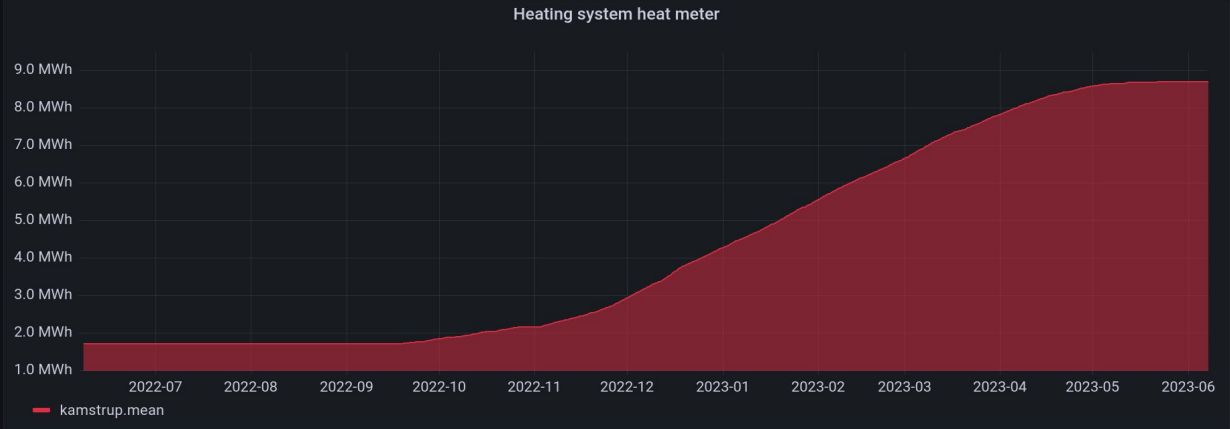
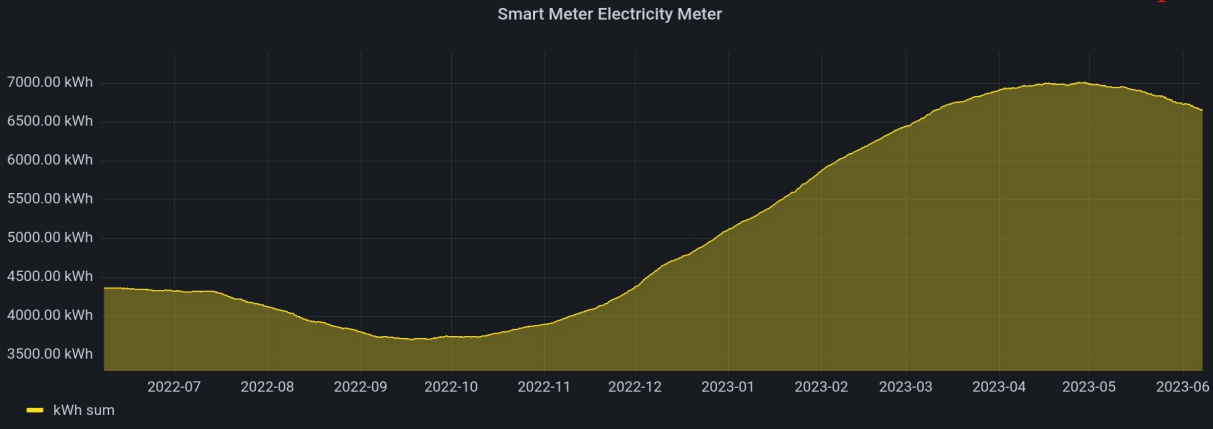
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WiFi 2.4Ghz



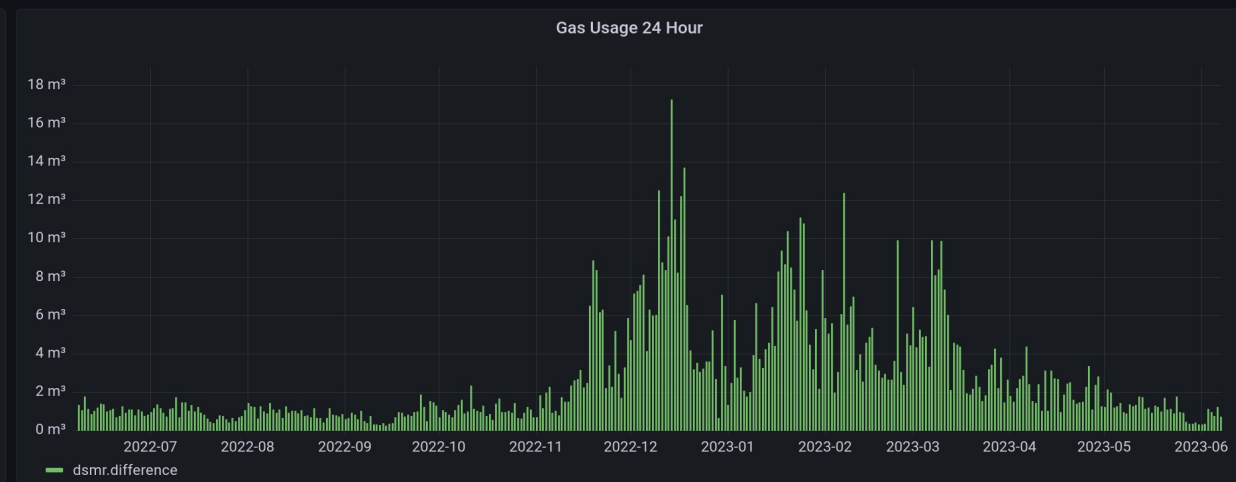
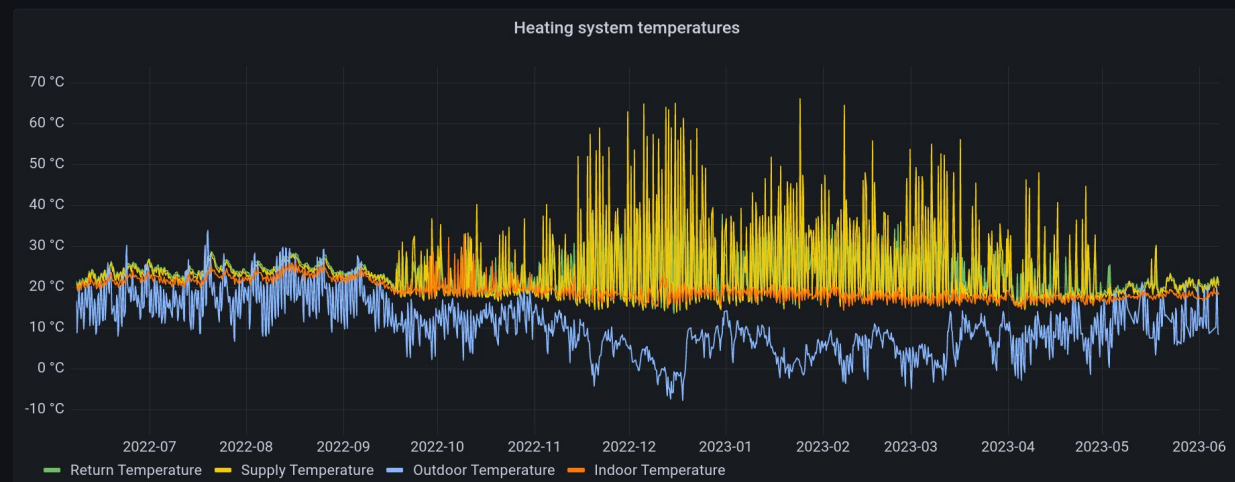
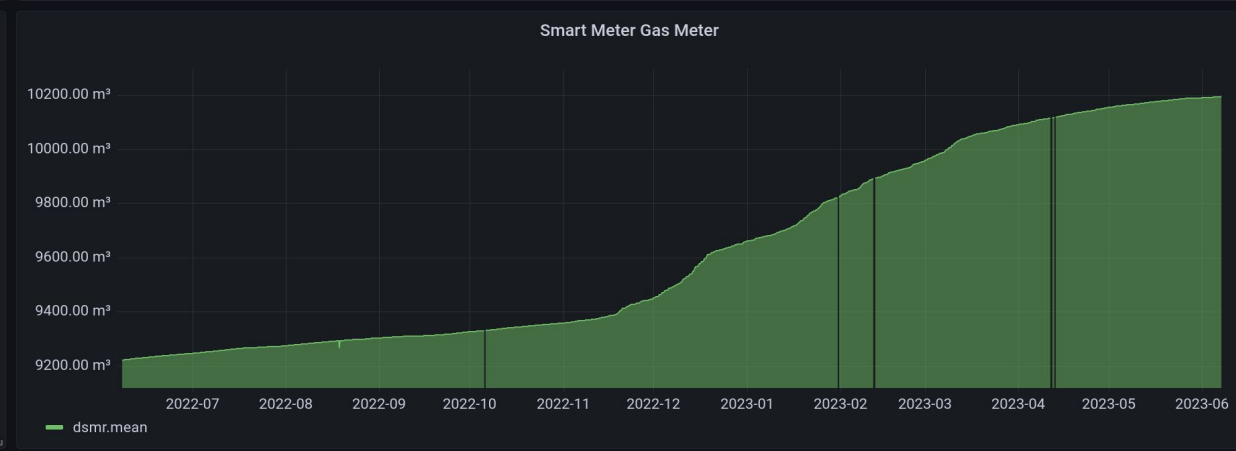
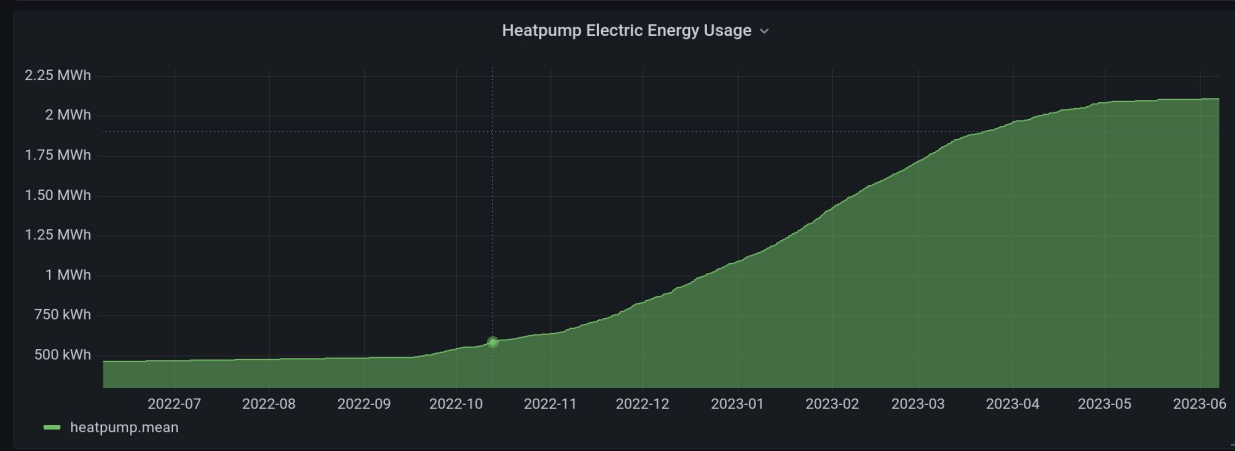
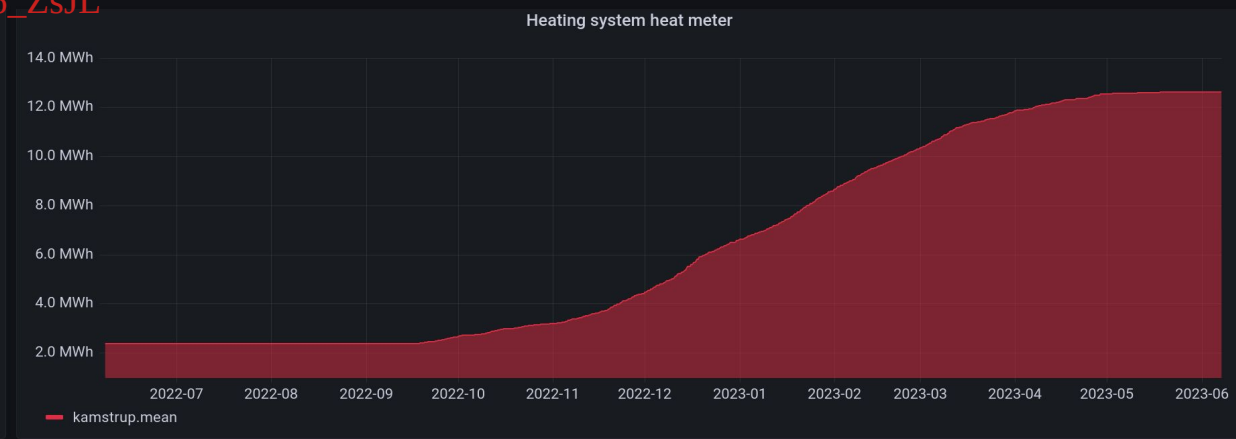
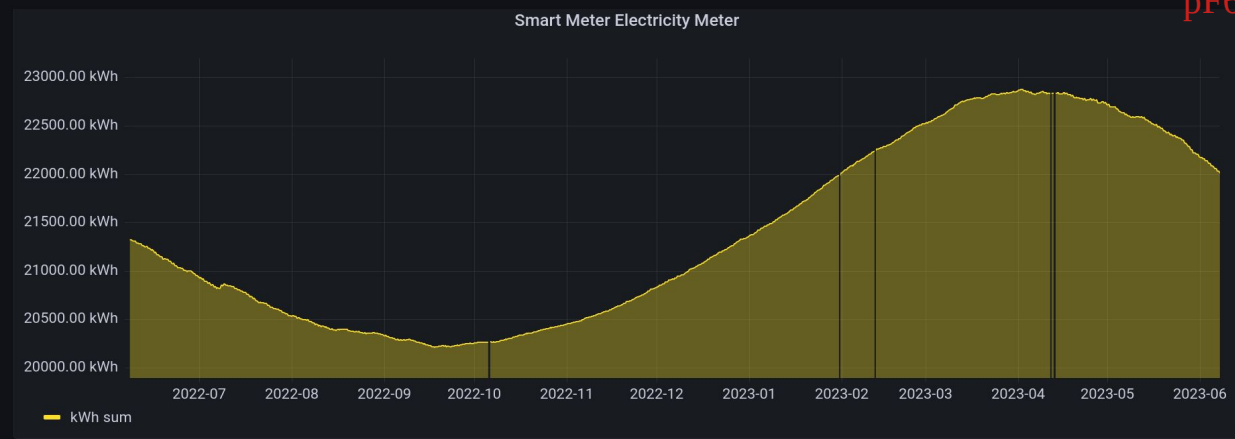
Locatie 3: Uitlezing slimme meter

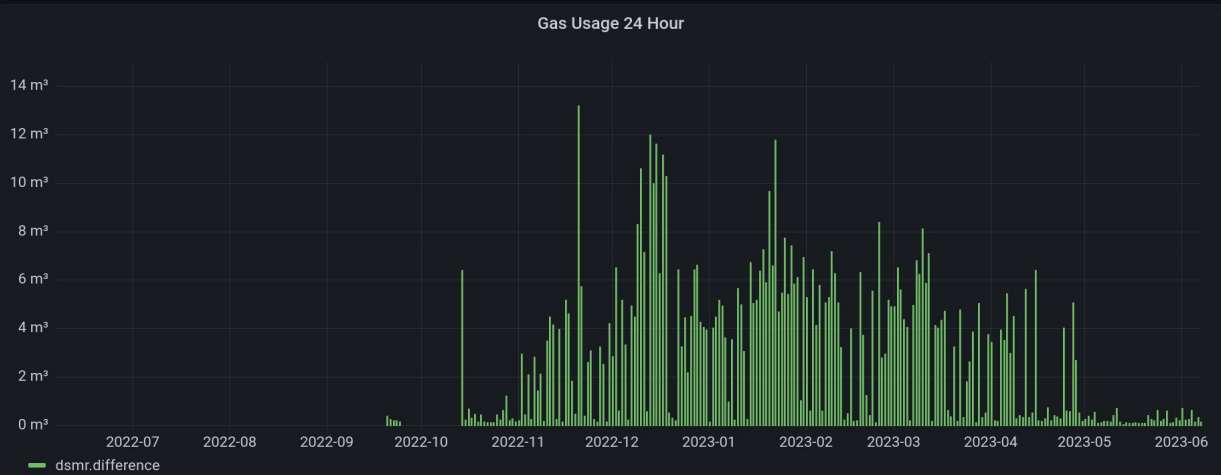
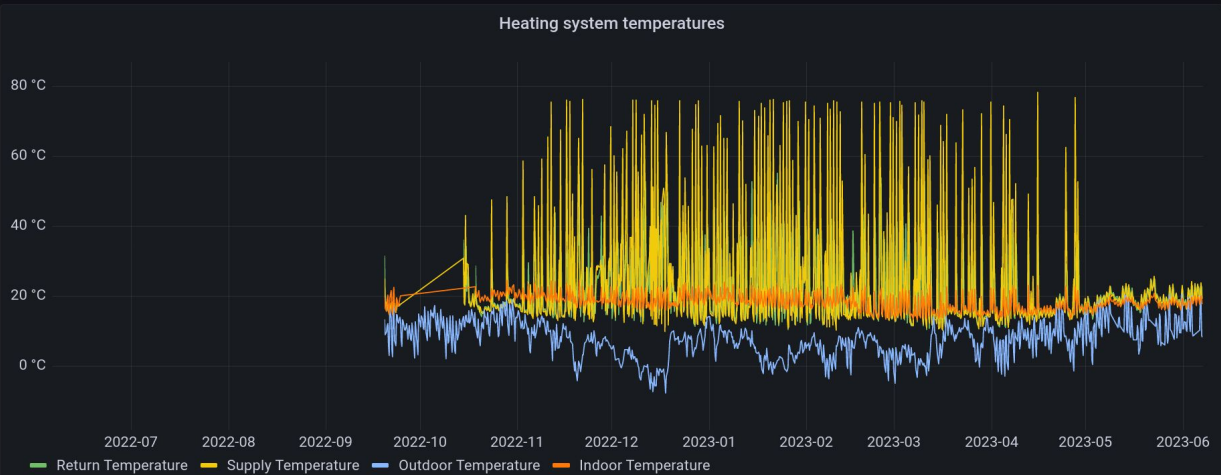
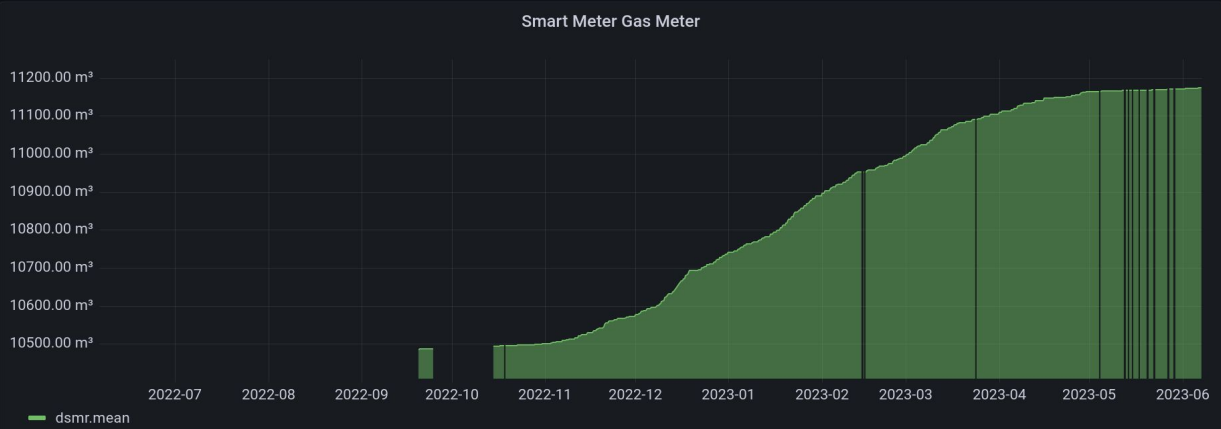
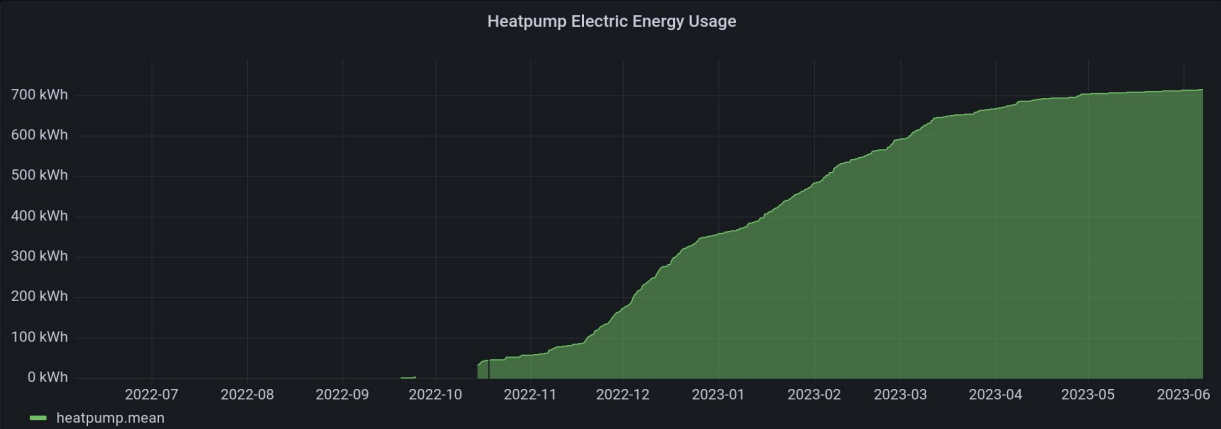
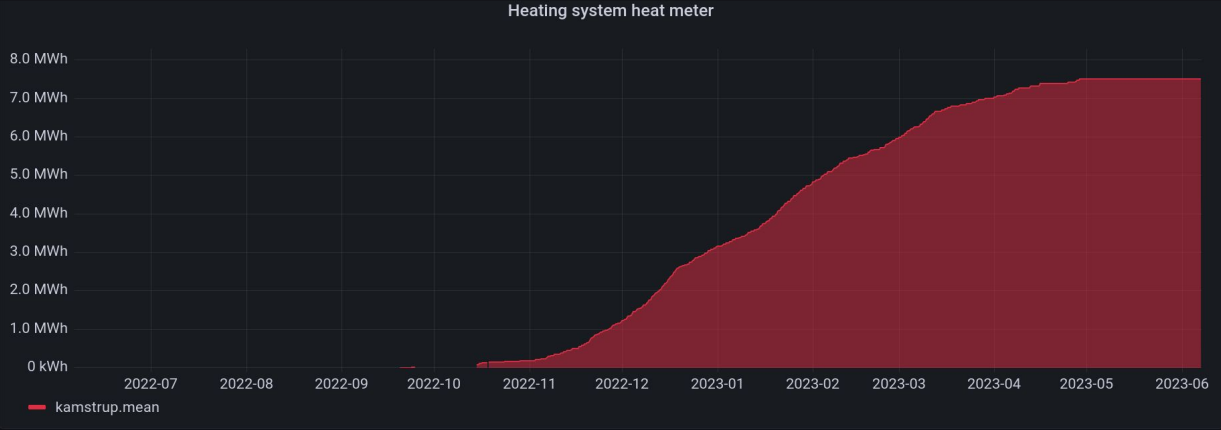
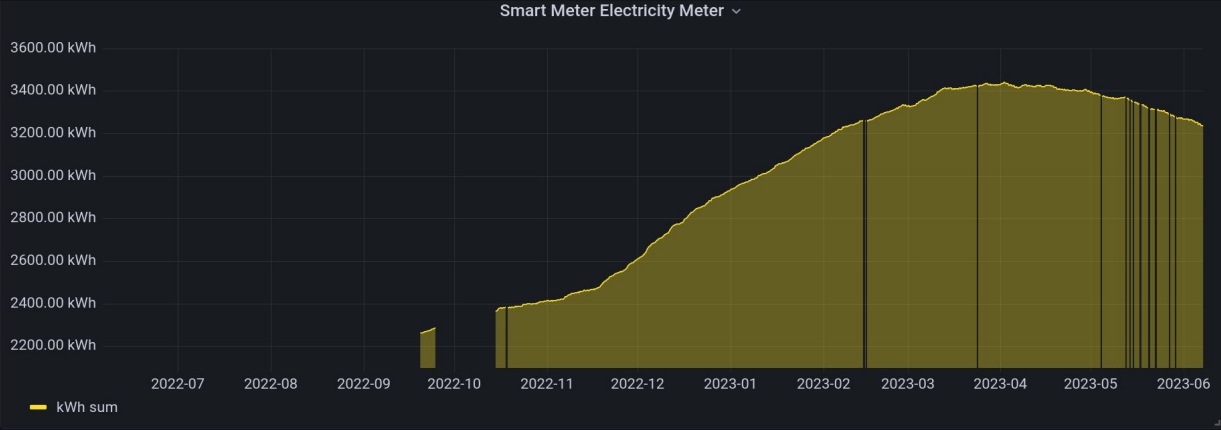
Locatie 4: Kamertemperatuur en  
vochtigheid





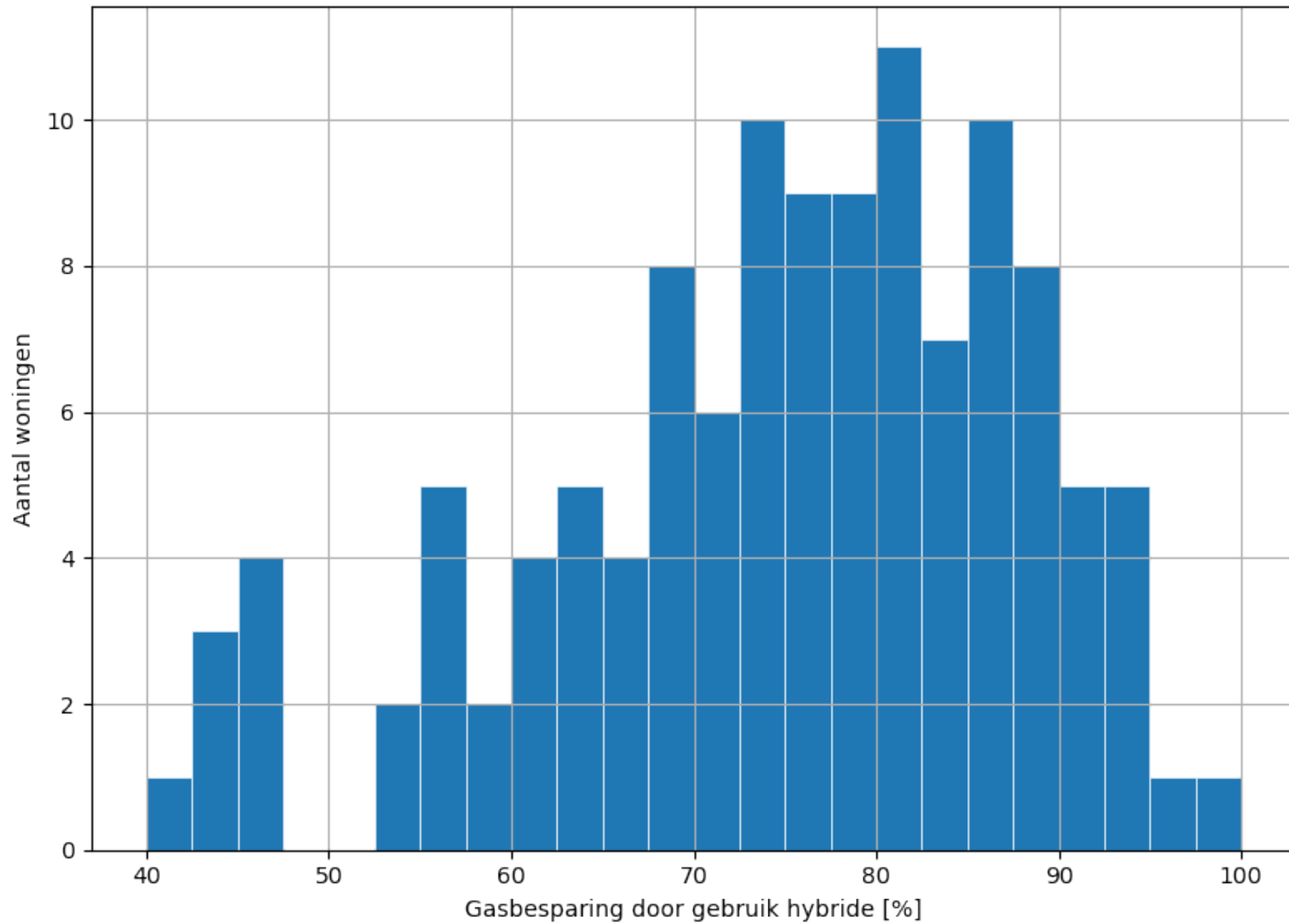
pF6\_ZsJL



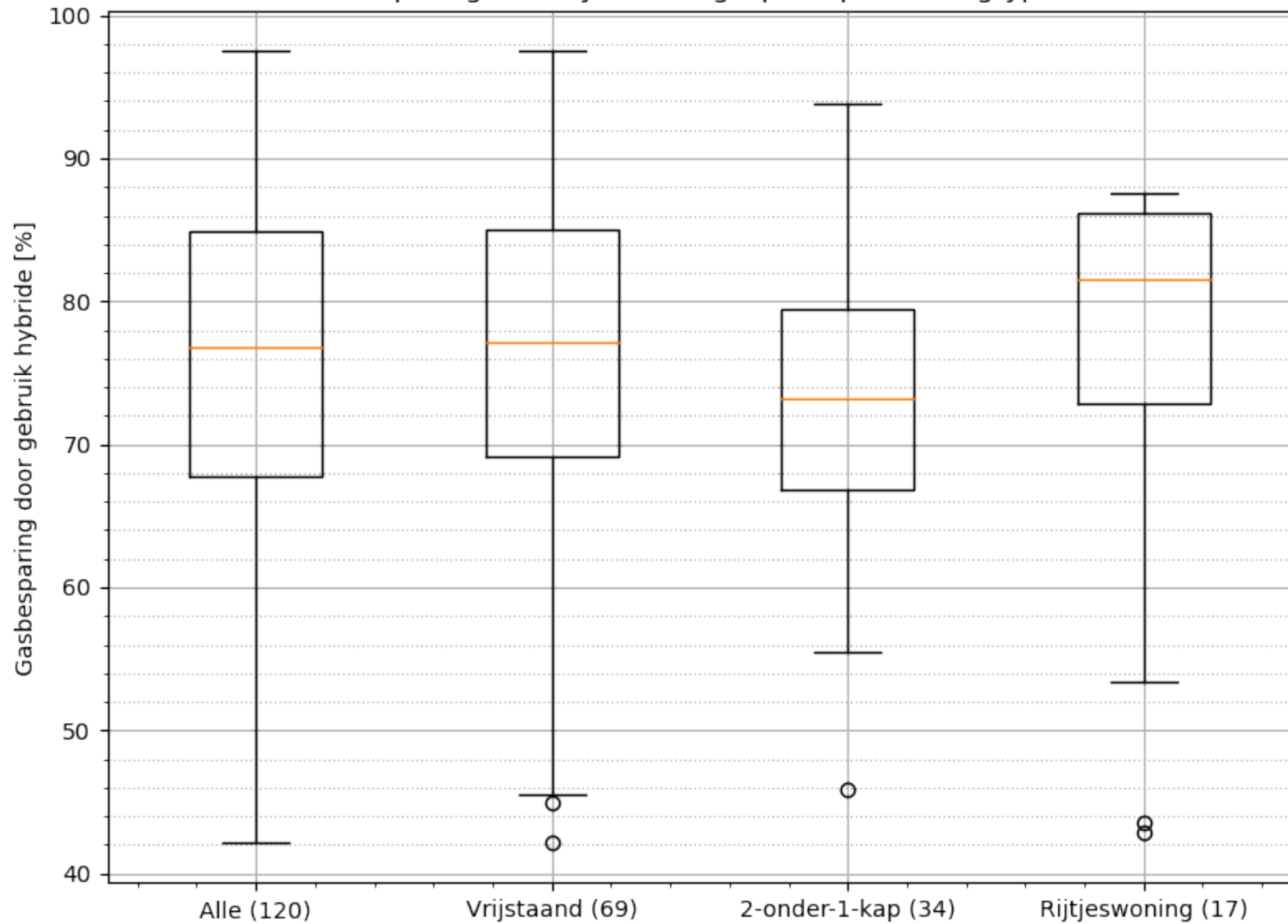


| ID         | Bouwjaar | Woning type | 2019/<br>2020 | 2020/<br>2021 | Hybride | Besparing | Hybride | Besparing-<br>prestatie | Prijsplfd | April 2023 |
|------------|----------|-------------|---------------|---------------|---------|-----------|---------|-------------------------|-----------|------------|
|            | jaar     |             | m3            | m3            | m3      |           | kWh     |                         | euro      | euro       |
| 0168EtI7   | 2018     | rijtjes     | 1312          | 1275          | 351     | 73%       | 1381    | 6.7                     | 814       | 1059       |
| 017eG8JU * | 1967     | rijtjes     | 1199          | 1391          | 731     | 44%       | 766     | 7.2                     | 511       | 666        |
| 217cZs88   | 1989     | 2zonder1kap | 1589          | 1425          | 217     | 86%       | 2496    | 5.1                     | 872       | 1128       |
| 2V6wD949   | 2004     | vrijstaand  | 1925          | 2247          | 429     | 79%       | 5324    | 3.1                     | 273       | 327        |
| pF6_ZsJL * | 1969     | vrijstaand  | 2198          | 2377          | 974     | 57%       | 1646    | 7.8                     | 1246      | 1623       |
| PV6uFdNP * | 1965     | 2zonder1kap | 1951          | 1814          | 465     | 75%       | 2318    | 6.0                     | 1128      | 1465       |
| w16iEsJG   | 1982     | vrijstaand  | 2319          | 2224          | 141     | 94%       | 4668    | 4.5                     | 1222      | 1574       |
| x16wH9Za   | 1930     | vrijstaand  | 3723          | 3126          | 1163    | 66%       | 2637    | 8.4                     | 2224      | 2899       |
| X17aG8FC * | 2003     | 2zonder1kap | 1381          | 1302          | 419     | 69%       | 1991    | 4.5                     | 541       | 698        |
|            |          |             |               |               |         |           |         |                         |           |            |
| Gem. 120   | 1977     |             | 1904          | 1841          | 475     | 75%       | 2369    | 5.8                     | 949       | 1229       |

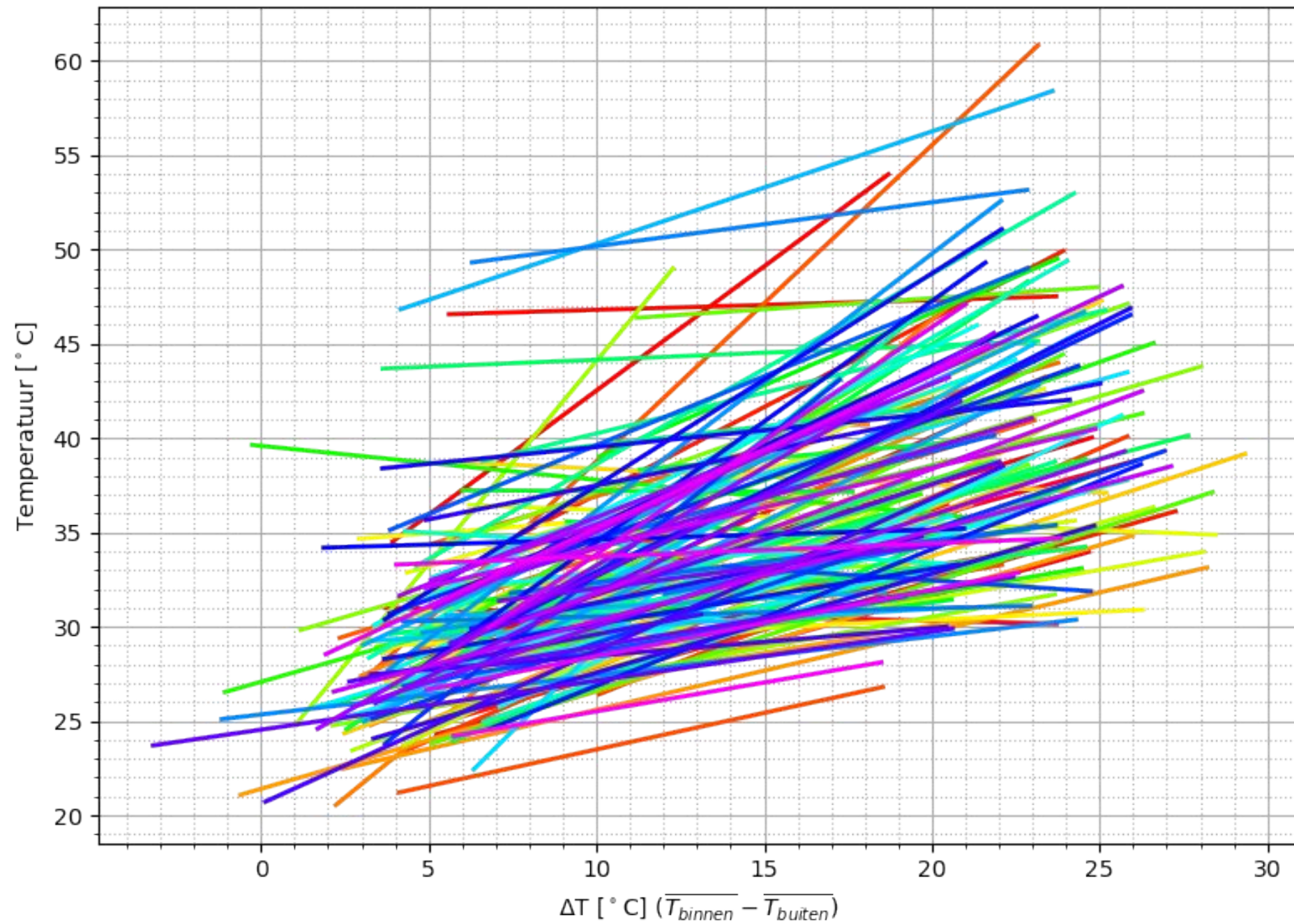
Verdeling van de gasbesparing

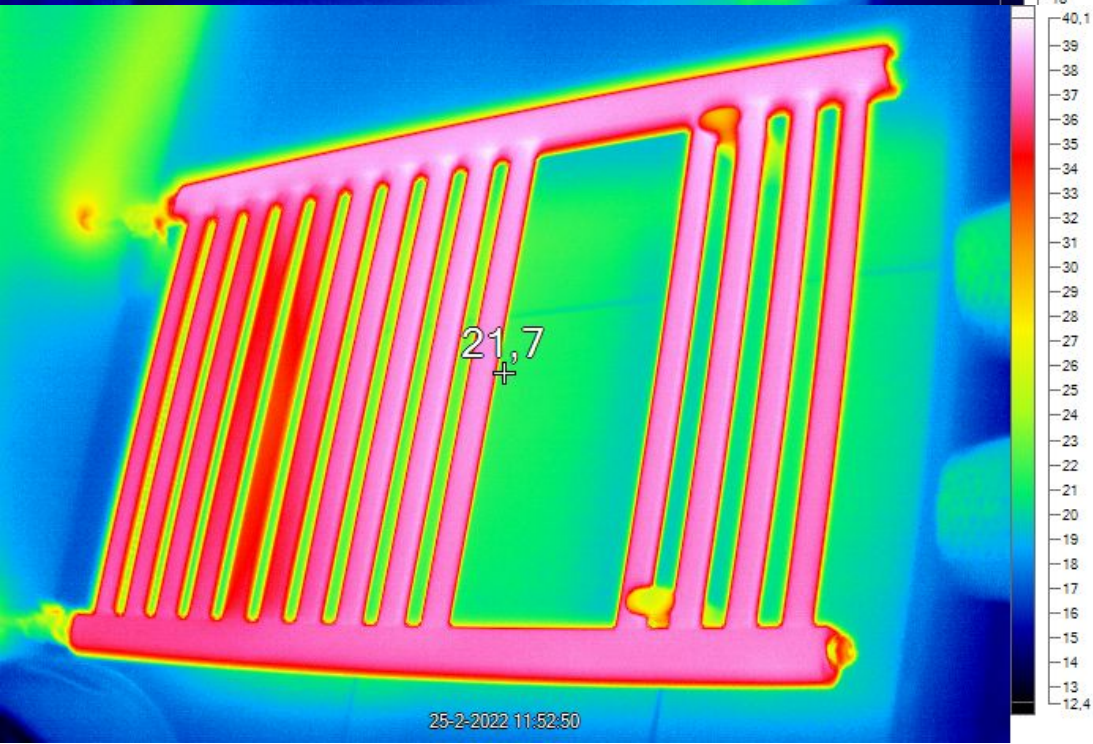
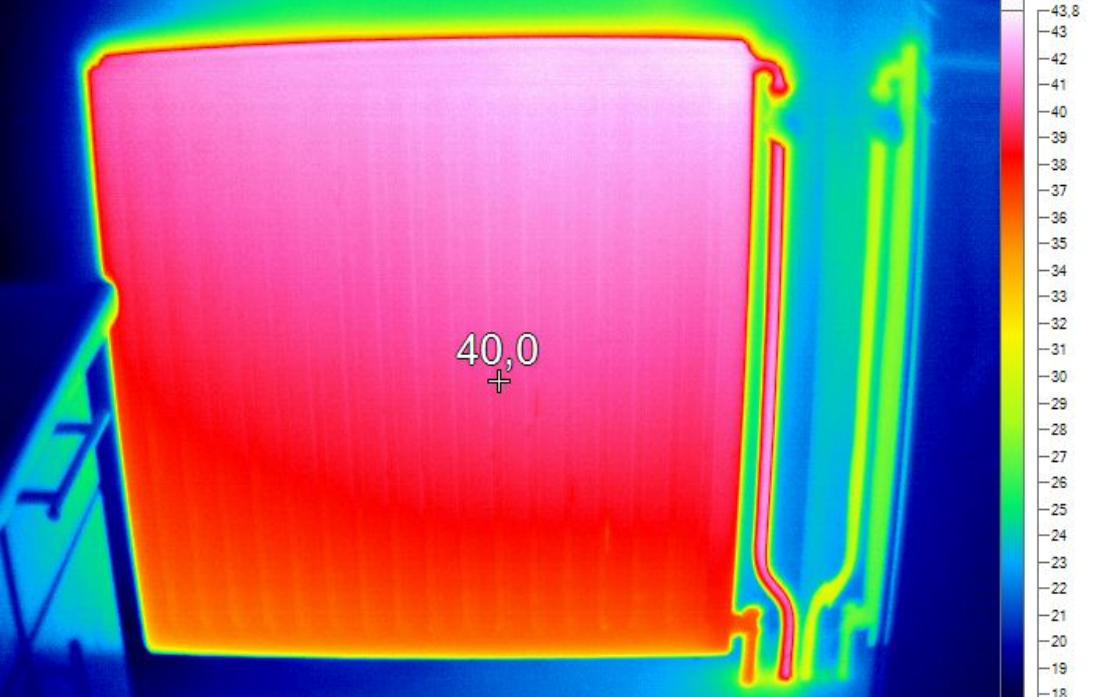


Besparing door hybride uitgesplitst per woningtype



Aanvoertemperatuur, alle woningen





# Conclusies:

- Besparing gas 75% en financieel 1.000 euro
- Grote spreiding: 15% minder dan 60%
- Kwaliteit afgifte en regeling is essentieel
- Nog 1 jaar: herhaling en afgifte verbetering





