



## Single Family House



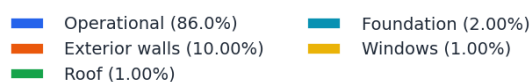
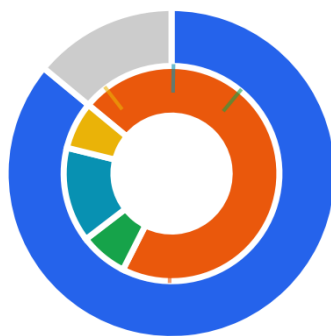
|                      |          |
|----------------------|----------|
| Region               | south    |
| Municipality Size    | urban    |
| Municipality Growth  | growing  |
| Age Class            | 2010-    |
| Adjacency            | terraced |
| Net leased area [m²] | 83.4     |
| Storey Height [m]    | 2.7      |
| Storeys a.g.         | 2.0      |



## Building Performance (KPIs)

| KPI                                                                         | Mean     | 95% CI    | Unit                            | CV   | n <sub>Sim</sub> |
|-----------------------------------------------------------------------------|----------|-----------|---------------------------------|------|------------------|
| Final heat energy demand - per year                                         | 5311.83  | ± 153.39  | kWh/a                           | 0.19 | 45               |
| Final heat energy demand - per m² net leased area and year                  | 63.66    | ± 0.95    | kWh/m²a                         | 0.10 | 45               |
| Carbon footprint (GWP) from heat energy - per year                          | 1327.13  | ± 38.32   | kgCO <sub>2</sub> eq,B6/a       | 0.19 | 45               |
| Carbon footprint (GWP) from heat energy - per m² net leased area and year   | 15.91    | ± 0.24    | kgCO <sub>2</sub> eq,B6/m²a     | 0.10 | 45               |
| Life Cycle Carbon footprint (GWP) - over 50 years                           | 92062.31 | ± 2510.24 | kgCO <sub>2</sub> eq,full/50a   | 0.18 | 45               |
| Life Cycle Carbon footprint (GWP) - per m² net leased area and for 50 years | 1103.34  | ± 12.78   | kgCO <sub>2</sub> eq,full/m²50a | 0.08 | 45               |

## ABC



| Building element | D [kgCO <sub>2</sub> eq/50a] |
|------------------|------------------------------|
| Exterior walls   | -115.9                       |
| Roof             | 22.5                         |
| Foundation       | -121.4                       |
| Windows          | -85.5                        |



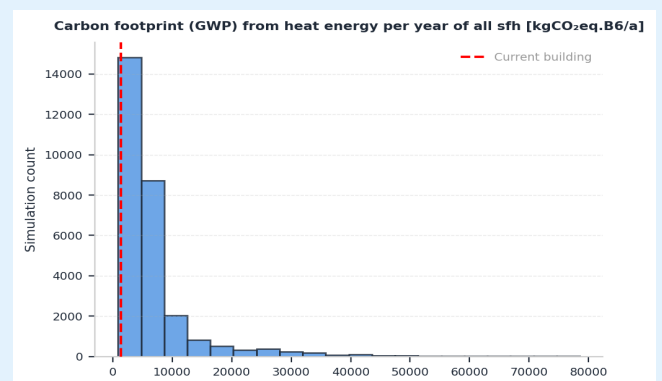
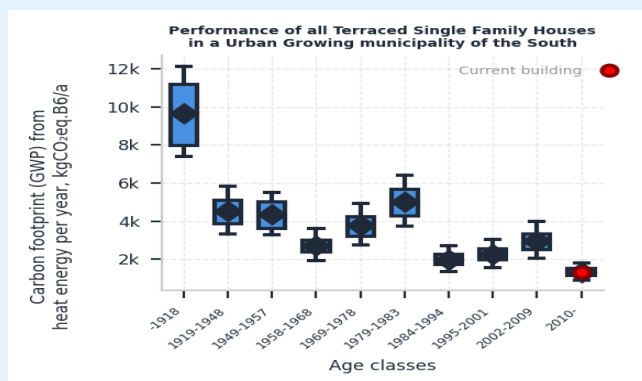
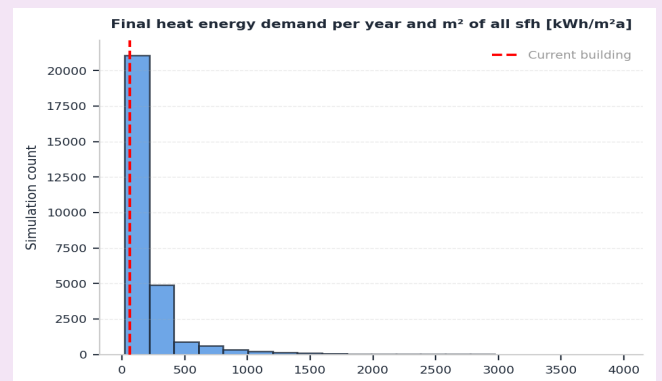
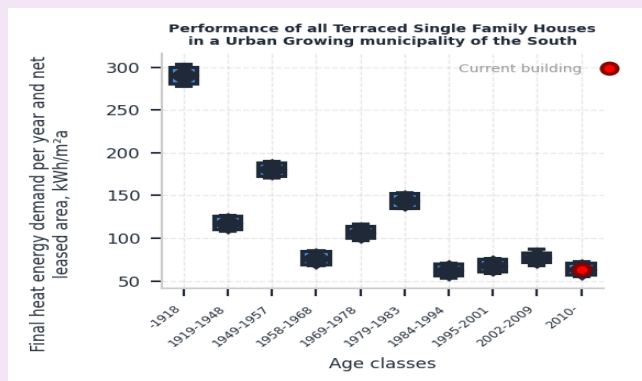
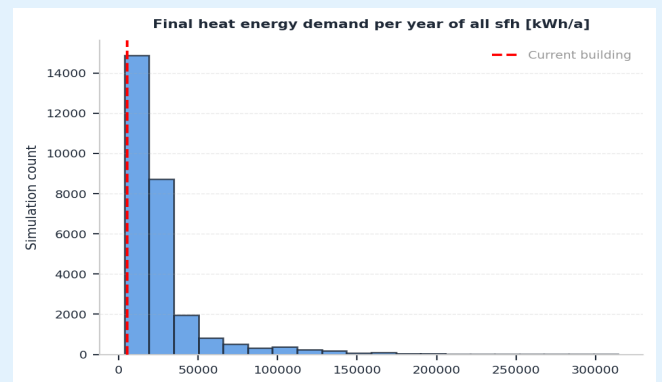
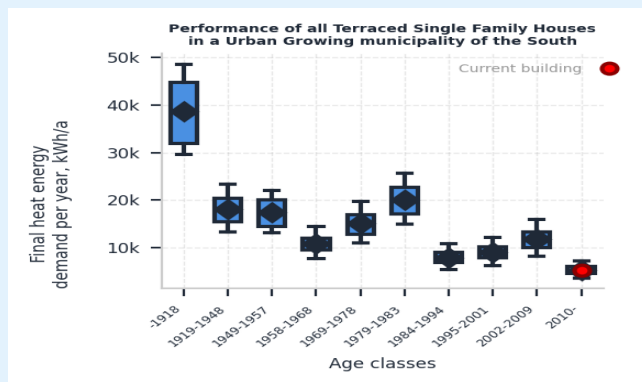
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## Building Performance





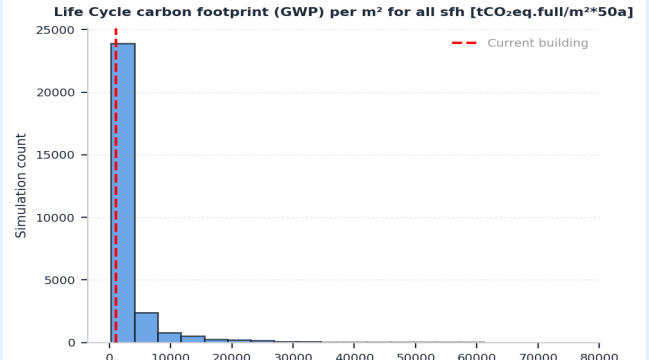
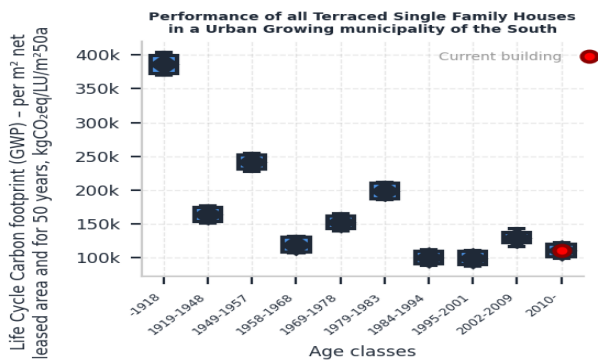
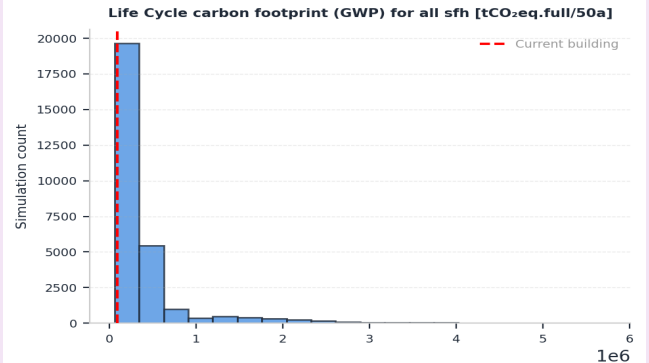
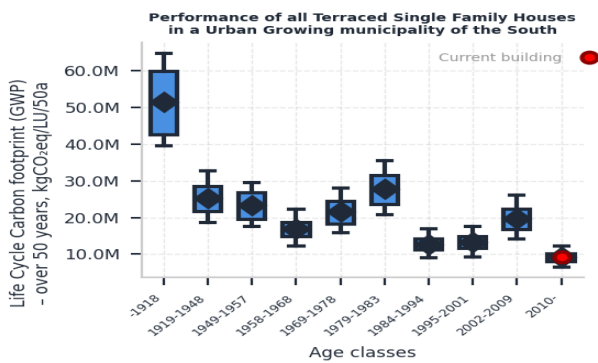
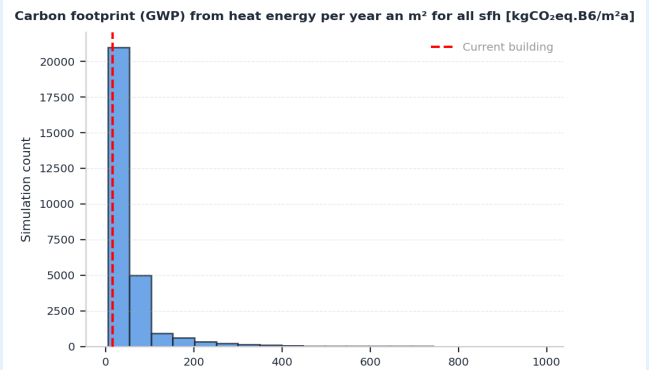
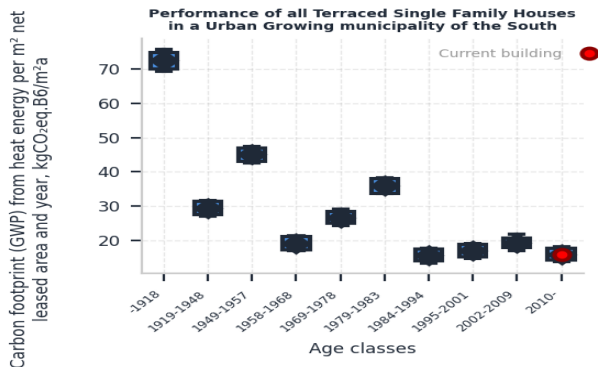
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### Exterior Wall

| Type: massive | U [W/m²K]     |            |            |
|---------------|---------------|------------|------------|
|               | Actual: 0.280 | Min: 0.160 | Max: 0.600 |

| Layer | Material Name            | $t_i$ [m] | $\rho_i$ [kg/m³] | $\lambda_i$ [W/mK] | $c_i$ [J/kgK] | EPD <sub>1</sub> | EPD <sub>2</sub> |
|-------|--------------------------|-----------|------------------|--------------------|---------------|------------------|------------------|
| 0     | insulating plaster       | 0.02      | 1291             | 0.39               | 1291          | 7                | -                |
| 1     | lightweight concrete     | 0.24      | 900              | 0.43               | 1050          | 10               | -                |
| 2     | EPS perimeter insulation | 0.11      | 31               | 0.04               | 1450          | 5                | -                |

### Interior Wall

| U [W/m²K]     |            |            |
|---------------|------------|------------|
| Actual: 2.420 | Min: 0.140 | Max: 0.300 |

| Layer | Material Name | $t_i$ [m] | $\rho_i$ [kg/m³] | $\lambda_i$ [W/mK] | $c_i$ [J/kgK] | EPD <sub>1</sub> | EPD <sub>2</sub> |
|-------|---------------|-----------|------------------|--------------------|---------------|------------------|------------------|
| 0     | lime plaster  | 0.01      | 1600             | 0.7                | 850           | 7                | -                |
| 1     | solid brick   | 0.15      | 1800             | 0.7                | 850           | 10               | -                |
| 2     | lime plaster  | 0.01      | 1600             | 0.7                | 850           | 5                | -                |

### Roof

| Type: massive | U [W/m²K]     |            |            |
|---------------|---------------|------------|------------|
|               | Actual: 0.270 | Min: 0.140 | Max: 0.300 |

| Layer | Material Name    | $t_i$ [m] | $\rho_i$ [kg/m³] | $\lambda_i$ [W/mK] | $c_i$ [J/kgK] | EPD <sub>1</sub> | EPD <sub>2</sub> |
|-------|------------------|-----------|------------------|--------------------|---------------|------------------|------------------|
| 0     | concrete         | 0.14      | 2400             | 2.1                | 776           | 9                | -                |
| 1     | glass wool       | 0.14      | 120              | 0.04               | 840           | 6                | -                |
| 2     | bituminized felt | 0.01      | 1200             | 5                  | 1000          | 3                | -                |



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### Foundation

| Type: massive | U [W/m²K]     |            |            |
|---------------|---------------|------------|------------|
|               | Actual: 0.290 | Min: 0.160 | Max: 0.600 |

| Layer | Material Name            | t <sub>i</sub> [m] | ρ <sub>i</sub> [kg/m³] | λ <sub>i</sub> [W/mK] | c <sub>i</sub> [J/kgK] | EPD <sub>1</sub> | EPD <sub>2</sub> |
|-------|--------------------------|--------------------|------------------------|-----------------------|------------------------|------------------|------------------|
| 0     | oak                      | 0.03               | 685                    | 0.3                   | 1500                   | 1                | -                |
| 1     | floating cement screed   | 0.04               | 1940                   | 1.4                   | 1000                   | 13               | -                |
| 2     | EPS perimeter insulation | 0.12               | 31                     | 0.04                  | 1450                   | 5                | -                |
| 3     | reinforced concrete      | 0.16               | 2400                   | 2.1                   | 776                    | 9                | -                |

### Floor

| U [W/m²K]     |            |            |
|---------------|------------|------------|
| Actual: 2.420 | Min: 0.140 | Max: 0.300 |

| Layer | Material Name          | t <sub>i</sub> [m] | ρ <sub>i</sub> [kg/m³] | λ <sub>i</sub> [W/mK] | c <sub>i</sub> [J/kgK] | EPD <sub>1</sub> | EPD <sub>2</sub> |
|-------|------------------------|--------------------|------------------------|-----------------------|------------------------|------------------|------------------|
| 0     | floating cement screed | 0.04               | 1940                   | 1.4                   | 1000                   | 13               | -                |
| 1     | EPS_040_15             | 0.06               | 15                     | 0.04                  | 1500                   | 2                | -                |
| 2     | reinforced concrete    | 0.16               | 2104                   | 1.94                  | 776                    | 9                | -                |

### Window System

| Glazing | EPD <sub>Gl</sub> | Frame type | EPD <sub>Fr</sub> | window wall share |
|---------|-------------------|------------|-------------------|-------------------|
| 3       | 12                | wood       | 11                | 0.2246            |

### Heating System

| Generator 1      | EPD | Generator 2                  | EPD | Heating energy carrier | EPD |
|------------------|-----|------------------------------|-----|------------------------|-----|
| solarthermal_sfh | 4   | boiler_gas_medium_condensing | -   | nan                    | -   |





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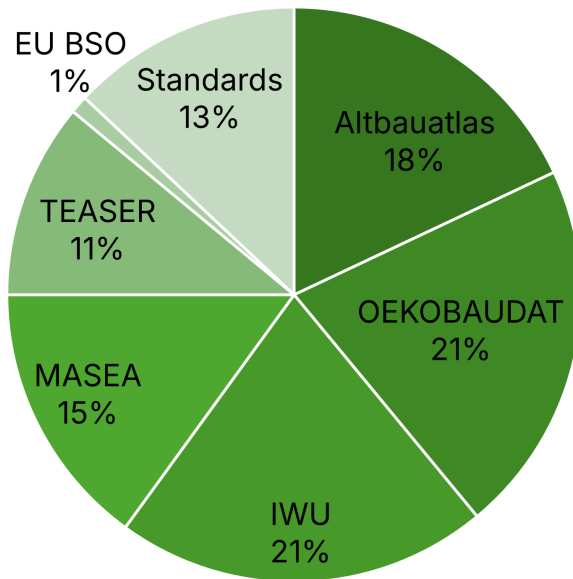


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## EPD Summary Table

| SPN | Full EPD ID                          | Material Title                                                           |
|-----|--------------------------------------|--------------------------------------------------------------------------|
| 1   | 17bcb2ce-39fd-400b-baf9-370c63589efd | Timber oak (generic, 12% moisture / 10.7% H2O content)                   |
| 2   | 205b761d-e344-49c3-a3a9-bb1bfd59b916 | Expanded Polystyrene (EPS) Foam Insulation (density 15 kg/m³)            |
| 3   | 27ccffb8-02ec-466d-b925-f6db91d4ef71 | Bitumen sheets G 200 S4                                                  |
| 4   | 413ba0ce-2a78-44e2-89d2-d9adfd4e492c | Flat solar collector                                                     |
| 5   | 4e83c488-bb36-40b0-bfd4-b2aa7f1c0f04 | Expanded Polystyrene (EPS) Foam Insulation (density 30 kg/m³)            |
| 6   | 7091503e-34e5-44cd-9acb-7c2f16f6097f | Foam glass insulation material                                           |
| 7   | 7e8801e0-c0e4-4995-bf8a-883181f6aa20 | ETICS gluing and coating mineral lightweight plaster                     |
| 8   | 84aa7483-9824-49a9-a3e3-f9fb092ea7b7 | Use - 1 kWh of final energy from gas calorific value (according to GEG)  |
| 9   | Synthetic_2                          | Concrete C30/37 with reinforcement steel                                 |
| 10  | Synthetic_3                          | Pumice concrete with reinforcement steel                                 |
| 11  | b0c75d7b-4cce-41cf-b785-1db434ee9c3f | Window sash (spruce)                                                     |
| 12  | dcf38066-e336-46a7-b0a8-b2453dd2872d | Window glass, single                                                     |
| 13  | fe371be5-c72f-4203-8569-a085ef375ba4 | CALCIUM SULPHATE FLOWING SCREED AND CONVENTIONAL CALCIUM SULPHATE SCREED |



This archetype represents :

- 0.03% of all Single-Family Houses
- 0.07% of all Single-Family Houses of the specific region
- 0.53% of all Single-Family Houses of the specific region and municipality type

| Data source | Link                                                                                                                                                           |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Altbauatlas | <a href="https://www.altbauatlas.de/index.php">https://www.altbauatlas.de/index.php</a>                                                                        |
| OEKOBAUDAT  | <a href="https://www.oekobaudat.de/en.html">https://www.oekobaudat.de/en.html</a>                                                                              |
| IWU         | <a href="https://datenbasis.iwu.de/">https://datenbasis.iwu.de/</a><br><a href="https://wohngebaeuedaten2016.iwu.de/">https://wohngebaeuedaten2016.iwu.de/</a> |
| MASEA       | <a href="https://www.masea-ensan.de/">https://www.masea-ensan.de/</a>                                                                                          |
| TEASER      | <a href="https://ebc-tools.eonerc.rwth-aachen.de/en/teaser">https://ebc-tools.eonerc.rwth-aachen.de/en/teaser</a>                                              |
| EU BSO      | <a href="https://building-stock-observatory.energy.ec.europa.eu/database/">https://building-stock-observatory.energy.ec.europa.eu/database/</a>                |