



Multi Family House



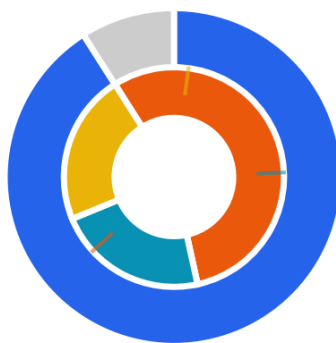
Region	south
Municipality Size	rural
Municipality Growth	growing
Age Class	-1918
Adjacency	terraced
Net leased area [m²]	312.0
Storey Height [m]	2.7
Storeys a.g.	3.0



Building Performance (KPIs)

KPI	Mean	95% CI	Unit	CV	n _{Sim}
Final heat energy demand - per year	61518.62	± 4202	kWh/a	0.65	90
Final heat energy demand - per m² net leased area and year	196.41	± 12.65	kWh/m²a	0.61	90
Carbon footprint (GWP) from heat energy - per year	15426.79	± 1044.74	kgCO ₂ eq,B6/a	0.64	90
Carbon footprint (GWP) from heat energy - per m² net leased area and year	49.25	± 3.14	kgCO ₂ eq,B6/m²a	0.61	90
Life Cycle Carbon footprint (GWP) - over 50 years	948684.31	± 68157.65	kgCO ₂ eq,full/50a	0.68	90
Life Cycle Carbon footprint (GWP) - per m² net leased area and for 50 years	3022.95	± 203.26	kgCO ₂ eq,full/m²50a	0.64	90

ABC



- Operational (91.0%)
- Exterior walls (5.00%)
- Foundation (2.00%)
- Windows (2.00%)
- Roof (0.00%)

Building element	D [kgCO ₂ eq/50a]
Exterior walls	605.9
Roof	211.0
Foundation	573.6
Windows	-1,615



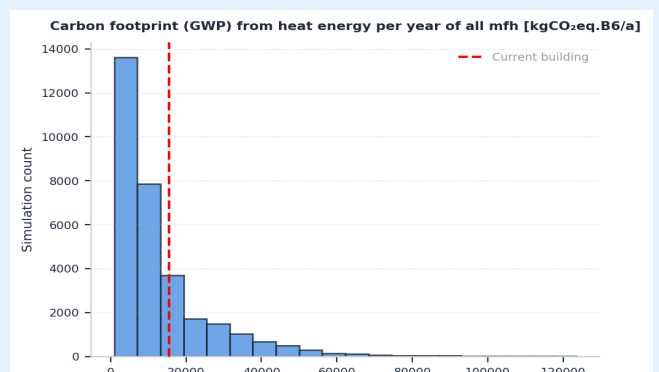
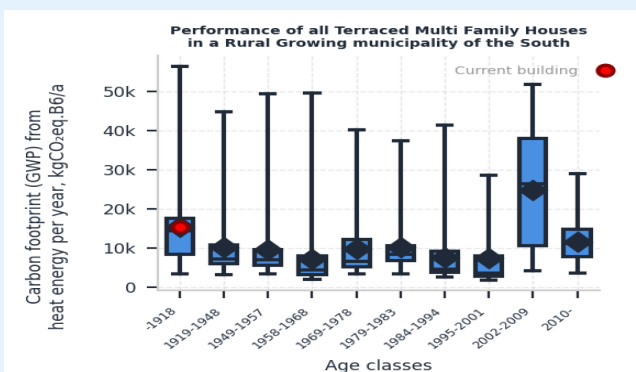
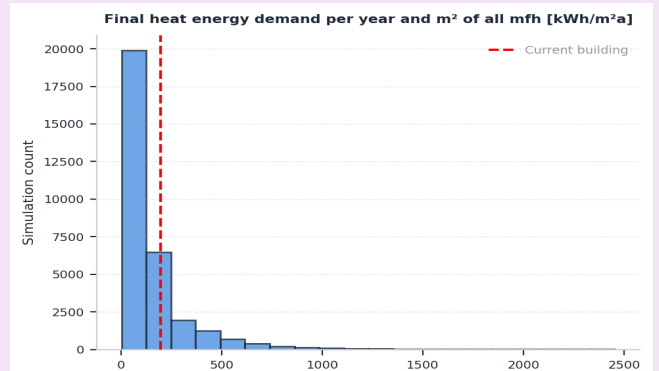
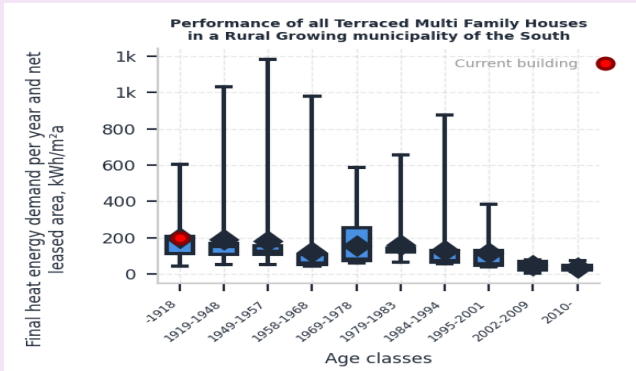
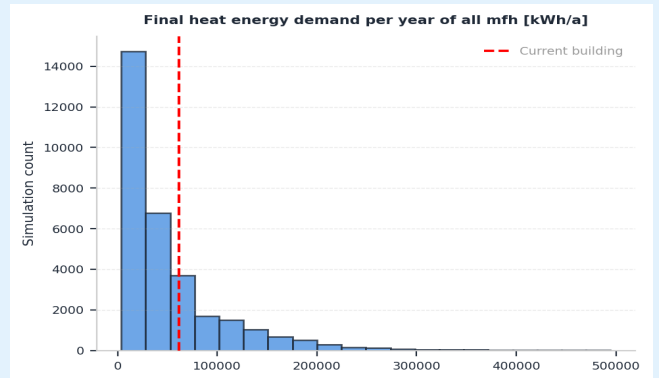
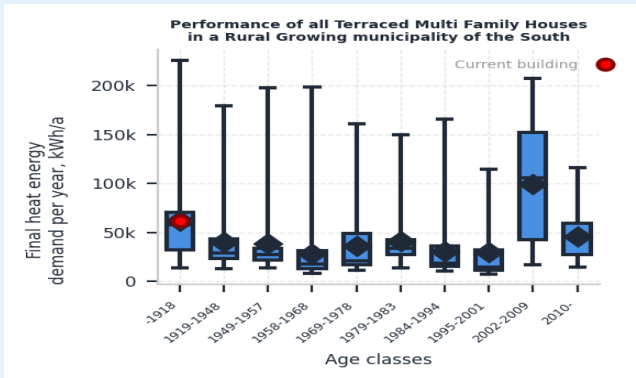
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Building Performance





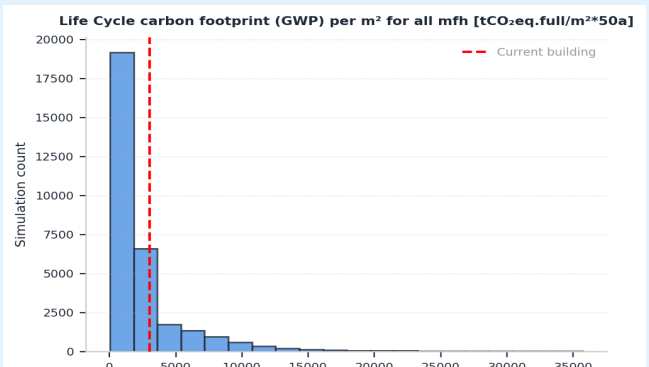
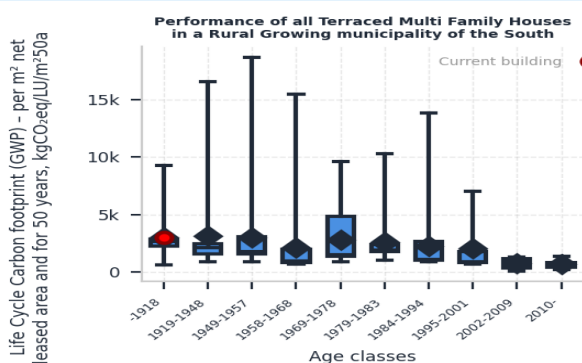
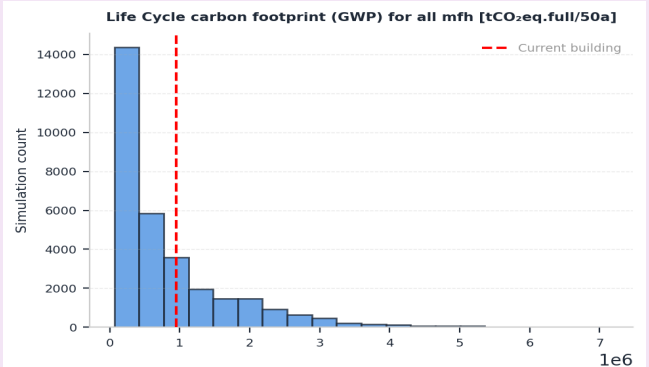
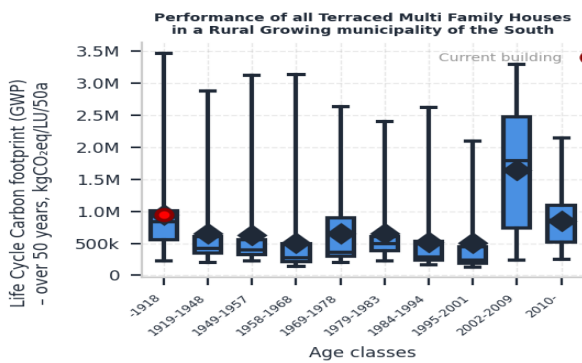
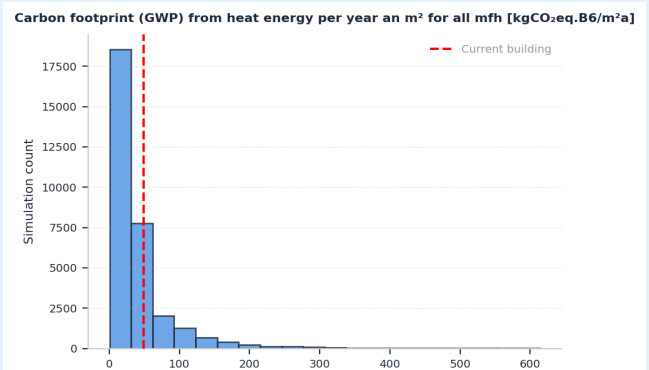
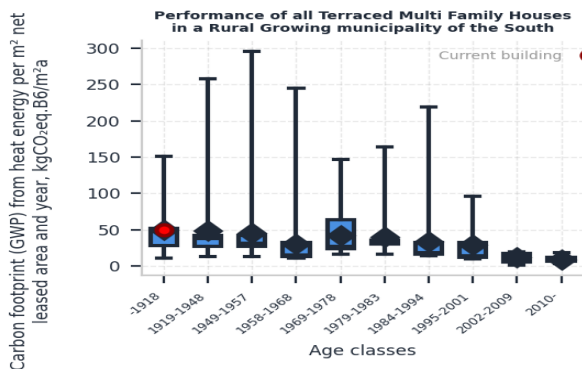
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Exterior Wall

Type: massive	U [W/m²K]		
	Actual: 1.340	Min: 0.180	Max: 1.700

Layer	Material Name	t_i [m]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	gypsum	0.015	850	0.3	1000	10	-
1	solid brick	0.3	1800	0.6	850	1	-
2	lime plaster	0.02	1600	0.7	850	8	-

Interior Wall

U [W/m²K]		
Actual: 2.170	Min: 0.190	Max: 2.100

Layer	Material Name	t_i [m]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	gypsum	0.015	850	0.3	1000	10	-
1	solid brick	0.15	1800	0.79	850	1	-
2	gypsum	0.015	850	0.3	1000	8	-

Roof

Type: wooden	U [W/m²K]		
	Actual: 1.990	Min: 0.190	Max: 2.600

Layer	Material Name	t_i [m]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	lime plaster	0.01	1600	0.7	850	8	-
1	rafters	0.08	455	0.23	1500	11	-



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Foundation

Type: massive	U [W/m²K]		
	Actual: 1.460	Min: 0.180	Max: 1.200

Layer	Material Name	t_i [m]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	hardwood	0.05	650	0.13	1500	9	-
1	reinforced concrete	0.18	2400	2.04	776	5	-

Floor

U [W/m²K]		
Actual: 2.170	Min: 0.190	Max: 2.100

Layer	Material Name	t_i [m]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	hardwood	0.05	650	0.13	1500	9	-
1	reinforced concrete	0.18	2104	1.94	776	4	-

Window System

Glazing	EPD _{Gl}	Frame type	EPD _{Fr}	window wall share
2	7	wood	6	0.1734

Heating System

Generator 1	EPD	Heating energy carrier	EPD
boiler_gas_medium_low_temperature	2	gas	3



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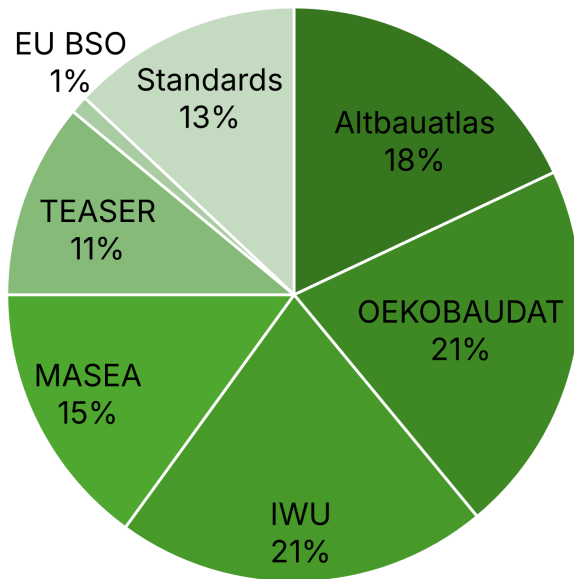


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EPD Summary Table

SPN	Full EPD ID	Material Title
1	127a23f5-d954-41c9-8f8a-ecca18aca691	Facing bricks
2	230155d8-a5df-4b32-b6e9-46bdbcf526b3	Gas low temperature boiler 20-120 kW (upright unit)
3	84aa7483-9824-49a9-a3e3-f9fb092ea7b7	Use - 1 kWh of final energy from gas calorific value (according to GEG)
4	Synthetic_2	Concrete C30/37 with reinforcement steel
5	Synthetic_7	Ready-mix concrete C30/37 with reinforcement steel
6	b0c75d7b-4cce-41cf-b785-1db434ee9c3f	Window sash (spruce)
7	dcf38066-e336-46a7-b0a8-b2453dd2872d	Window glass, single
8	ddc96ae4-086c-4033-9e45-c5589f1661ba	Lime plaster
9	e131431f-4d99-4d7a-ae0a-744a06de3524	Hardwood lumber - kiln dried (German average)
10	e6c2de31-b1a6-4c5d-ba5e-df252391321b	Gypsum (CaSO4 alpha semihydrate)
11	efa55966-4f29-4f15-bfec-8c08b3945923	Glued laminated timber



This archetype represents :

- 0.23% of all Multi-Family Houses
- 0.53% of all Multi-Family Houses of the specific region
- 0.94% of all Multi-Family Houses of the specific region and municipality type

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