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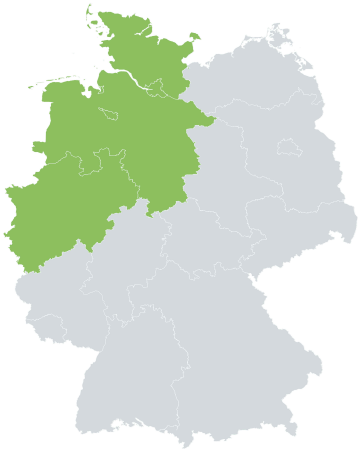
e3D Lehrstuhl für Energie-effizientes Bauen | RWTH AACHEN UNIVERSITY

Apartment Block

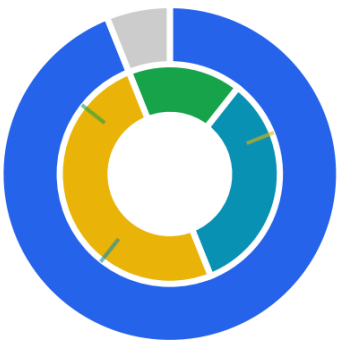


Region	north
Age Class	1995-2001
Net leased area [m²]	1552.1
Storey Height [m]	2.7
Storeys a.g.	3.0

Building Performance (KPIs)

KPI	Mean	95% CI	Unit	CV	n_{Sim}
Final heat energy demand - per year	103312.20	± 2891.13	kWh/a	0.19	90
Final heat energy demand - per m² net leased area and year	66.58	± 0.91	kWh/m²a	0.09	90
Carbon footprint (GWP) from heat energy - per year	25811.93	± 722.33	kgCO₂eq,B6/a	0.19	90
Carbon footprint (GWP) from heat energy - per m² net leased area and year	16.63	± 0.23	kgCO₂eq,B6/m²a	0.09	90
Life Cycle Carbon footprint (GWP) - over 50 years	1541462.84	± 41606.98	kgCO₂eq,full/50a	0.18	90
Life Cycle Carbon footprint (GWP) - per m² net leased area and for 50 years	993.36	± 11.32	kgCO₂eq,full/m²50a	0.08	90

ABC



Building element	D [kgCO₂eq/50a]
Exterior walls	-40.0
Roof	-5,964
Foundation	-678.4
Windows	-4,255

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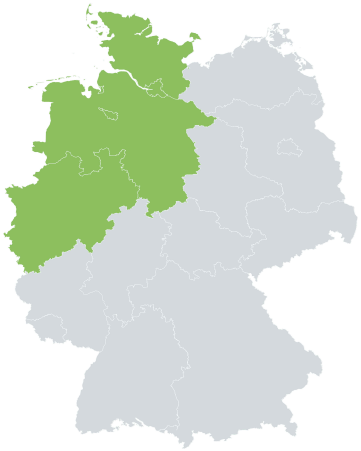

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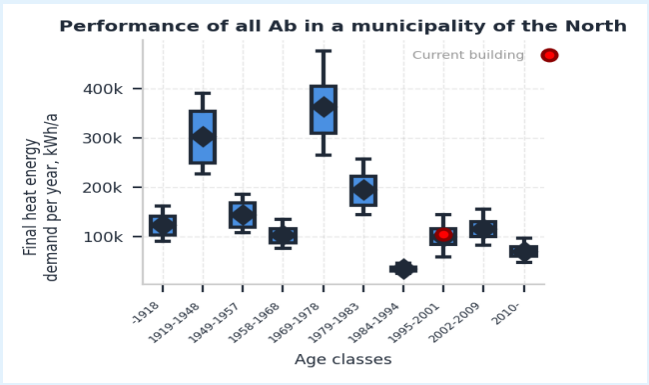

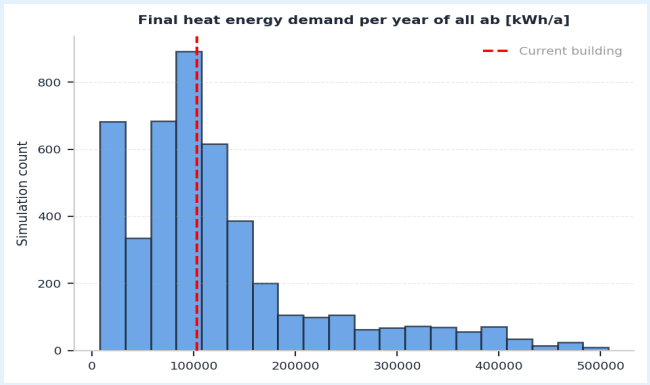

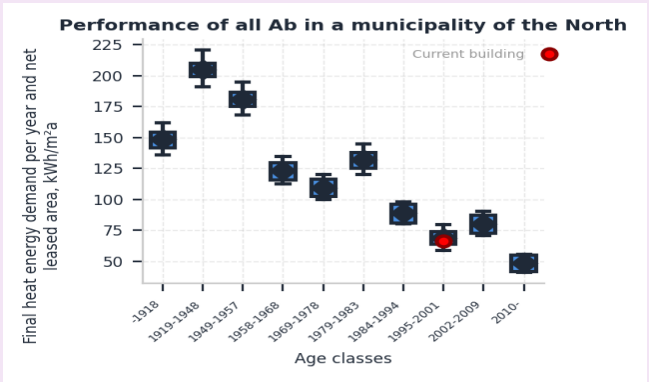

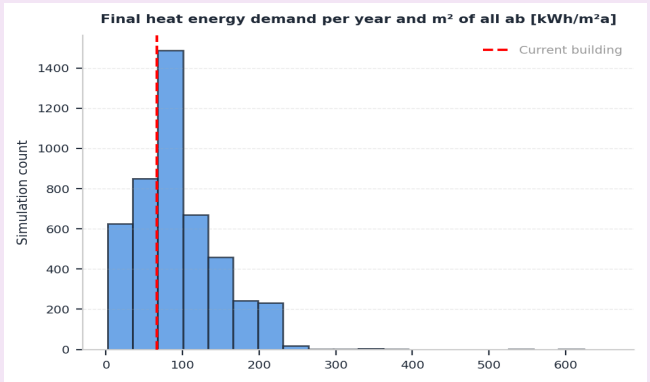

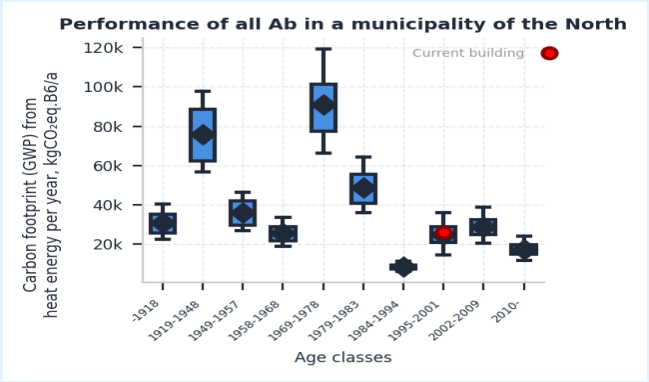

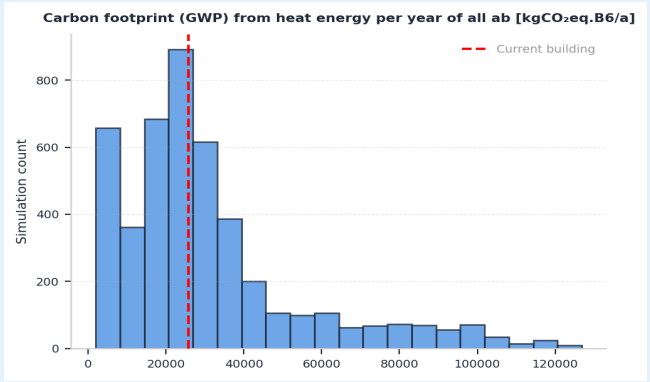

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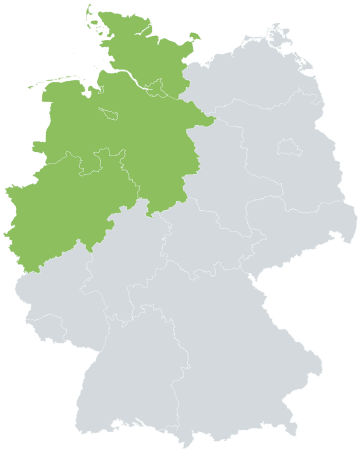
Apartment Block



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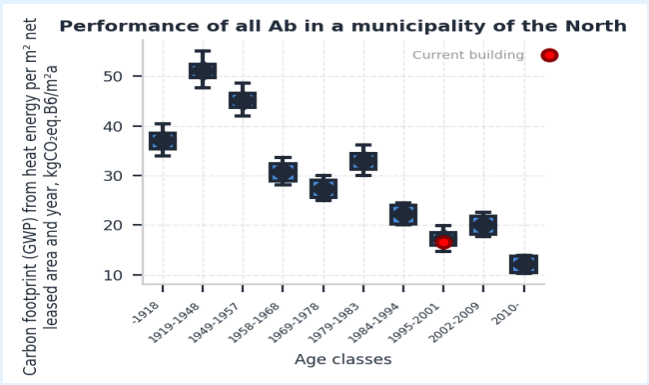

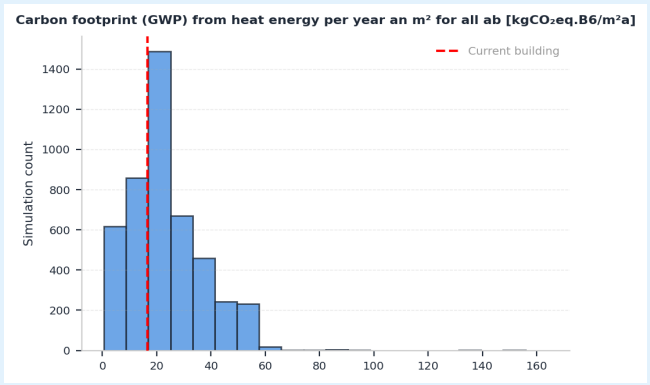

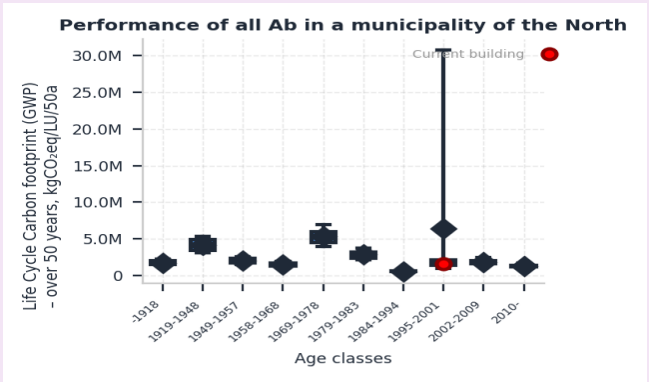

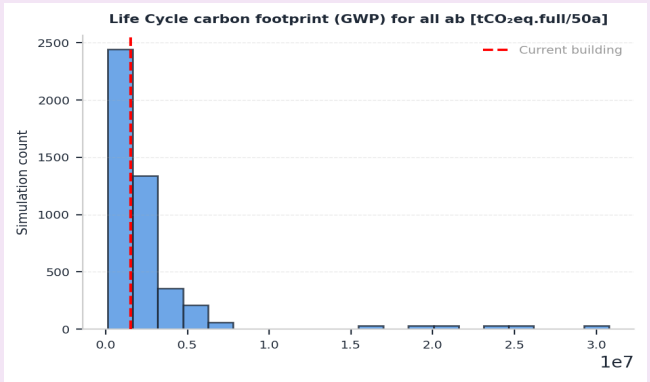

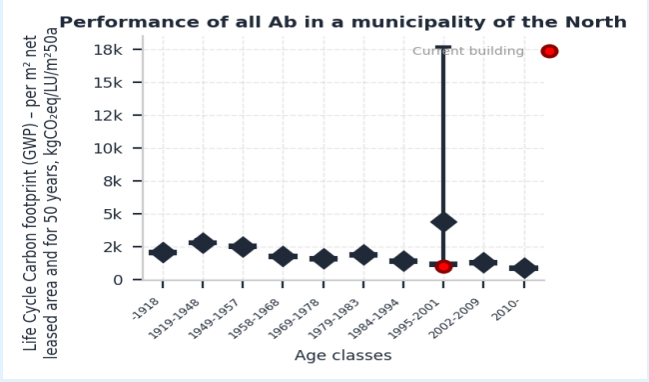

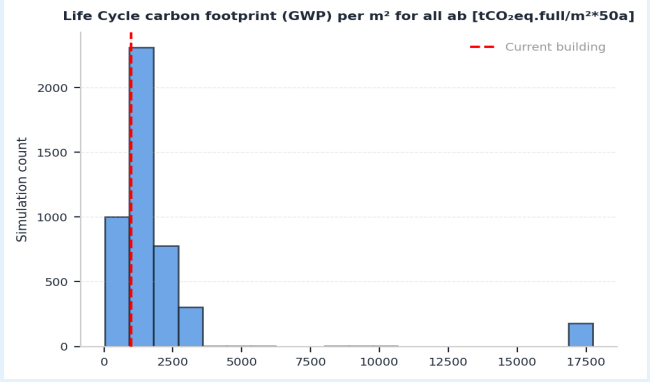

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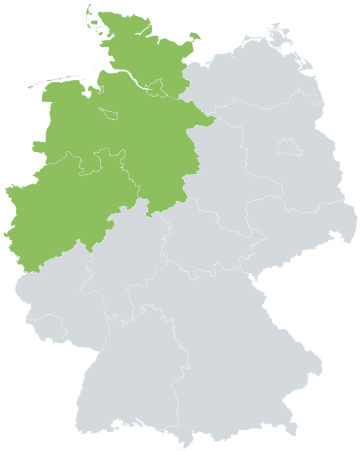
Apartment Block



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Storey Height [m]	2.7
Storeys a.g.	3.0

Exterior Wall

	U [W/m²K]		
Type: lightweight-timbered	Actual: 0.270	Min: 0.140	Max: 0.400

Layer	Material Name	t_i [m]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD_1	EPD_2
0	plaster board	0.013	900	0.21	1384	2	-
1	wooden beams	0.115	600	0.14	1500	12	-
2	mineral wool	0.1	60	0.04	850	5	-
3	chipboard	0.016	700	0.14	1700	3	-
4	exterior plaster	0.015	1800	0.87	850	1	-

Interior Wall

U [W/m²K]		
Actual: 0.650	Min: 0.140	Max: 0.300

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	0.1	1600	0.7	850	2	-
1	hardwood	0.15	650	0.14	1500	12	-
2	lime plaster	0.1	1600	0.7	850	5	-

Roof

	U [W/m²K]		
Type: wooden	Actual: 0.150	Min: 0.140	Max: 0.400

Layer	Material Name	t_i [m]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD_1	EPD_2
0	gypsum plasterboard	0.013	900	0.21	1228	16	-
1	rafters	0.08	600	0.13	1500	15	-
2	moving air layer	0.06	1.184	0.0261	1.005	10	-
3	polystyrene	0.12	40	0.035	1380	4	-
4	roof tiles	0.02	1786	0.55	889	11	-

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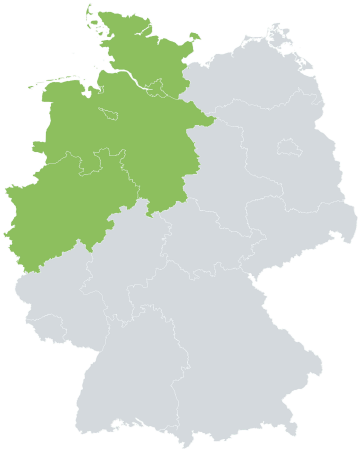
Apartment Block



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Storey Height [m]	2.7
Storeys a.g.	3.0

Foundation

	U [W/m²K]		
Type: massive	Actual: 0.570	Min: 0.160	Max: 0.600

Layer	Material Name	t_i [m]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD_1	EPD_2
0	floating cement screed	0.04	2000	1.4	1000	17	-
1	polystyrene	0.05	40	0.035	1380	4	-
2	reinforced concrete	0.16	2400	2.1	776	9	-

Floor

U [W/m²K]		
Actual: 0.650	Min: 0.140	Max: 0.300

Layer	Material Name	t_i [m]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD_1	EPD_2
0	cement screed	0.04	1950	1.4	1000	8	-
1	mineral wool	0.04	60	0.04	850	5	-
2	reinforced concrete	0.2	2400	2.1	776	9	-

Window System

Glazing	EPD_{Gl}	Frame type	EPD_{Fr}	window wall share
2	14	pvc	6	0.19497

Heating System

Generator 1	EPD	Heating energy carrier	EPD
boiler_gas_medium_condensing	13	gas	7

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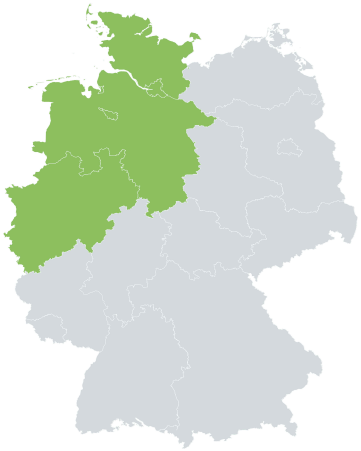

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EPD Summary Table

SPN	Full EPD ID	Material Title
1	004f3f4e-5bb8-4d9e-a104-6999a9e8ad5b	Gypsum lime plaster
2	0773f90c-78ef-4727-a966-3b005c1a1469	PLASTERBOARD / Tool
3	0f2f2410-d9e2-4e0f-837a-987cb3186d81	Chipboard (generic)
4	4e83c488-bb36-40b0-bfd4-b2aa7f1c0f04	Expanded Polystyrene (EPS) Foam Insulation (density 30 kg/m³)
5	50d421e2-3a7b-4659-92a4-f20d6a52fcf0	Mineral wool (facade insulation)
6	73de9e80-8ed2-47d8-b5b6-854c84166f24	Window sash PVC-U
7	84aa7483-9824-49a9-a3e3-f9fb092ea7b7	Use - 1 kWh of final energy from gas calorific value (according to GEG)
8	86d919ee-8f30-4ca4-9b7e-717aecba6ac0	Cement screed
9	Synthetic_2	Concrete C30/37 with reinforcement steel
10	Synthetic_8	Air layer
11	a6d60a75-7a4e-4dfc-87cc-fd40f68d279a	Roofing tiles (including accessories)
12	aeab0f39-5eab-422f-8c4b-822bb98aa63c	Laminated wood beam softwood (generic)
13	ce333ecb-6cad-441c-9dae-70966acf9333	Gas condensing boiler 20-120 kW (upright unit)
14	dcf38066-e336-46a7-b0a8-b2453dd2872d	Window glass, single
15	efa55966-4f29-4f15-bfec-8c08b3945923	Glued laminated timber
16	f6878cee-a4bd-43da-a830-c64b975cb957	DRY SCREED PLASTERBOARD / Tool
17	fe371be5-c72f-4203-8569-a085ef375ba4	CALCIUM SULPHATE FLOWING SCREED AND CONVENTIONAL CALCIUM SULPHATE SCREED

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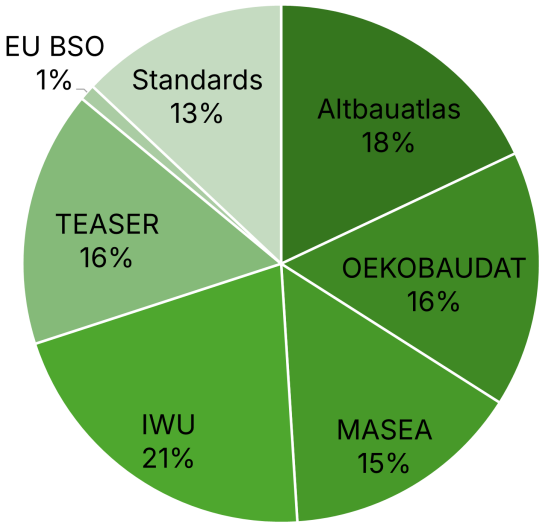

This archetype represents :

- 0.07% of all Apartment Blocks
- 0.15% of all Apartment Blocks of the specific region

Data source	Link
Altbauatlas	https://www.altbauatlas.de/index.php
OEKOBAUDAT	https://www.oekobaudat.de/en.html
IWU	https://datenbasis.iwu.de/ https://wohngebaeudedaten2016.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/

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