URBEM

Urban Reference Buildings for Energy Modelling

Region:	Trentino		Archetype code:
Building category:	Residential multifamily buildings		RES_APPBLOCK_ -1930_F_TN
Period of construction:	<1930		
Climatic zone:	F	**Number of records:** 4822	

Description (the codes associated with walls and slabs refer to the structures described in UNI/TR 11552:2014):

<u>External walls</u>: no data available

<u>Roof slabs</u>: no data available

Data sources:
EPC databases (100%)

	Data	Symbol	Unit of measure	Mean value	Standard deviation	Q1 (first quartile)	Median value	Q3 (third quartile)
BUILDING GEOMETRY	Number of floors	n_f	-	-	-	-	-	-
	Gross height	H_g	m	-	-	-	-	-
	Footprint area	$A_{footprint}$	m²	-	-	-	-	-
	Heated gross floor area	$A_{H;g}$	m²	-	-	-	-	-
	Heated net floor area	$A_{H;n}$	m²	506	245	349	412	549
	Heated gross volume	$V_{H;g}$	m³	-	-	-	-	-
	Heated net volume	$V_{H;n}$	m³	2099	1381	1406	1693	2228
	Compactness ratio	$A_{env}/V_{H;g}$	m⁻¹	0.54	0.13	0.45	0.52	0.60
	WWR – North orientation	WWR_N	-	-	-	-	-	-
	WWR – South orientation	WWR_S	-	-	-	-	-	-
	WWR – East orientation	WWR_E	-	-	-	-	-	-
	WWR – West orientation	WWR_W	-	-	-	-	-	-
	Window to useful floor area ratio	A_{wi}/A_{use}	-	-	-	-	-	-
ENVELOPE	Roof type		-					
	U-value of the roof	$U_{fl;up}$	W/(m²·K)	-	-	-	-	-
	External walls type		-					
	U-value of the wall	U_{wl}	W/(m²·K)	-	-	-	-	-
	Slab on ground floor type		-					
	U-value of the floor	$U_{fl;lw}$	W/(m²·K)	-	-	-	-	-
	Windows type		-					
	U-value of the windows	U_W	W/(m²·K)	-	-	-	-	-
	Shading system type		-					
GAINS and VENTILATION	Occupancy density *	O_C	person/m²	UNI EN 16798-1 - Table A.19				
	Lighting power density *	W_L	W/m²	UNI EN 16798-1 - A.8.3				
	Equipment power density *	W_A	W/m²	UNI EN 16798-1 - A.8.3				
	Type of ventilation		Natural: 100%					
	Air exchange rate *	n	h⁻¹	0.3	-	0.3	0.3	0.3
THERMAL SYSTEMS	Heating system type		Autonomous: 42%; Unknown: 40%; Centralized: 18%					
	Heating generator		Boiler (unknown type): 92%; Fireplace: 6%; Unknown: 1%; Air-source heat pump: 1%					
	Daily operating time of the heating system *	t_H	h	No limitation				
	Energy carrier		Natural gas 27%; Gas oil: 18%; Solid biomass: 16%; District heating: 12%; Electricity: 12%; LPG: 10%; Electricity from PV, wind turbines, hydraulic turbines: 5%					
	Heating emission sub-system		-					
	Cooling system type		Unknown: 100%					
	Daily operating time of the cooling system *	t_C	h	No limitation				
	Cooling emission sub-system		-					
	DHW system type		Autonomous – coupled with heating: 43%; Unknown: 22%; Autonomous - detached from heating: 19%; Centralized – coupled with heating: 13%; District heating: 3%					
	DHW generator		Natural gas boiler: 61%; Electric Heat Pump: 18%; Unknown: 16%; Electric boiler: 4%; Solar thermal: 1%					

* These values were not available in the considered sources, and are thus derived from UNI EN Standards

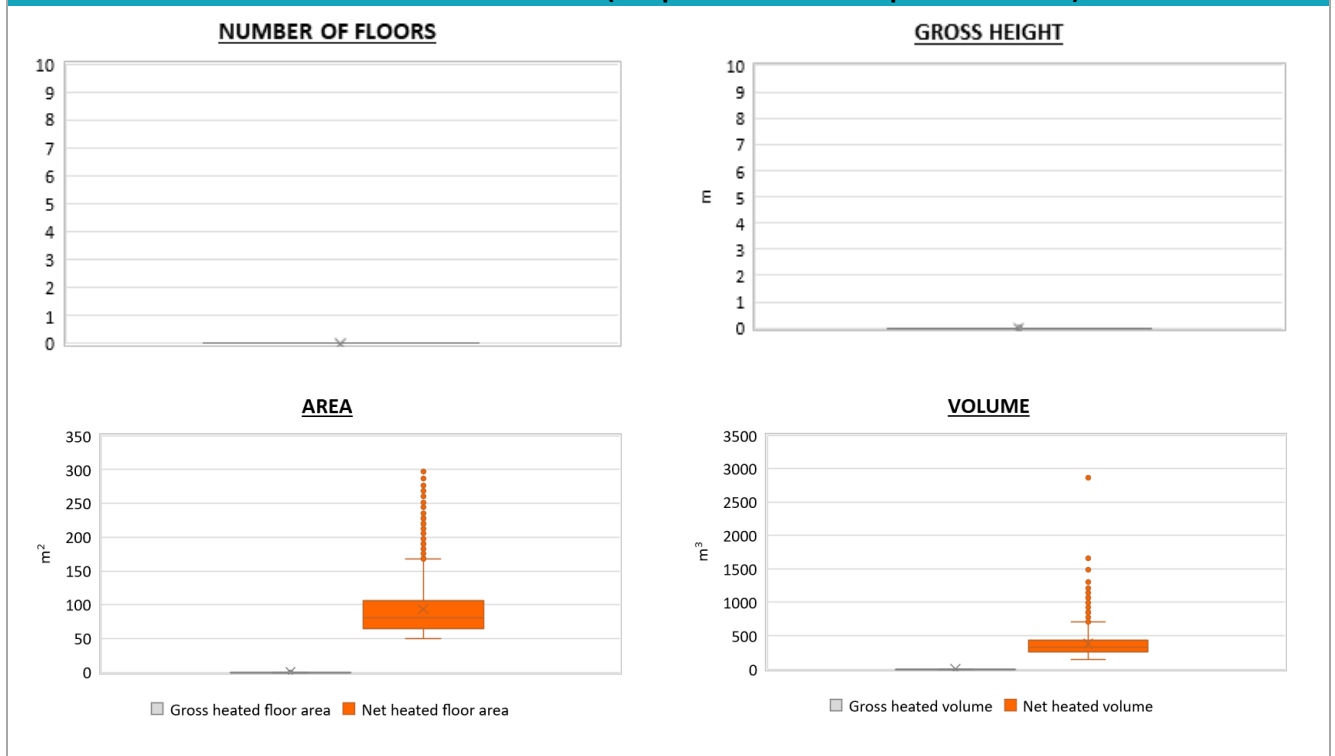| Region:	Trentino		Archetype code:
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Numerical variables – GEOMETRY

COMPACTNESS RATIO

WINDOWS TO WALL RATIO

WWR North ■ WWR South ■ WWR East ■ WWR West ■ WNFA
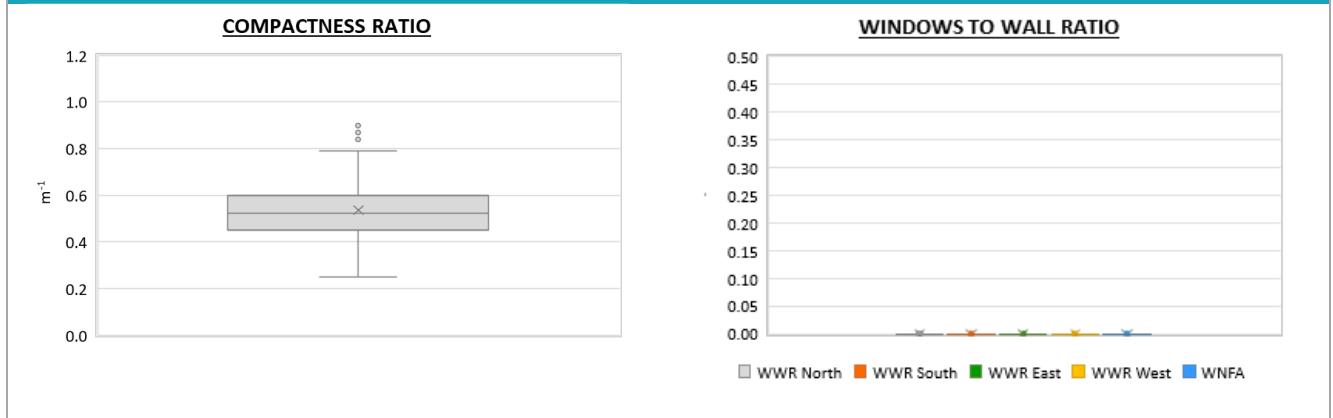
Numerical variables – ENVELOPE

OPAQUE BUILDING COMPONENTS U-VALUE

☐ External Walls ■ Slab on Ground Floor ■ Roof

WINDOWS U-VALUE
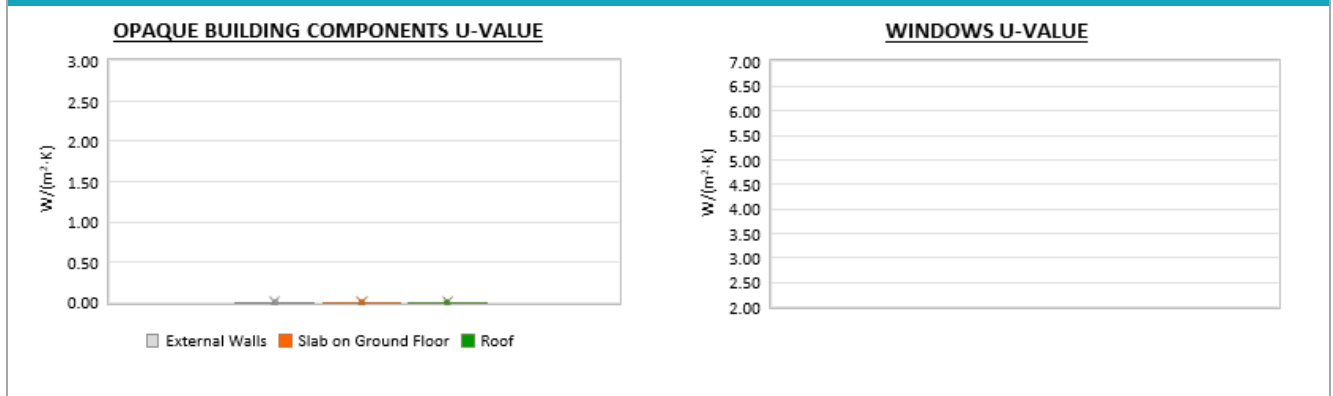
Numerical variables – GAINS, VENTILATION and SYSTEMS USAGE

AIR EXCHANGE RATE

OCCUPANCY DENSITY

INTERNAL GAINS POWER DENSITY

DAILY OPERATING TIME

☐ Heating ■ Cooling

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ADDITIONAL DATA

	Data	Symbol	Unit of measure	Mean value	Standard deviation	Q1 (first quartile)	Median value	Q3 (third quartile)
GEOMETRY: apartments	Inter-storey height	H_n	m	-	-	-	-	-
	Heated gross floor area	$A_{H;g}$	m^2	-	-	-	-	-
	Heated net floor area	$A_{H;n}$	m^2	93	42	65	80	106
	Heated gross volume	$V_{H;g}$	m^3	-	-	-	-	-
	Heated net volume	$V_{H;n}$	m^3	378	182	258	327	437
THERMAL SYSTEMS	Heating efficiency or *COP*	$\eta_{H;gen}$ or $COP_{H;gen}$	-	This value has to be retrieved from suitable datasheets				
	Total heating power *	$P_{H;gen}$	kW	39	676	22	25	30
	Cooling efficiency or *EER*	$\eta_{C;gen}$ or $EER_{C;gen}$	-	This value has to be retrieved from suitable datasheets				
	Total cooling power *	$P_{C;gen}$	kW	10	8	4	6	16
	Temperature of DHW	ϑ_W	°C	40	-	40	40	40
	DHW system power *	$P_{W;gen}$	kW	29	96	16	24	30

### Additional data: GEOMETRY (the plots refer to the apartment scale)

NUMBER OF FLOORS

GROSS HEIGHT

AREA

☐ Gross heated floor area ■ Net heated floor area

VOLUME

☐ Gross heated volume ■ Net heated volume

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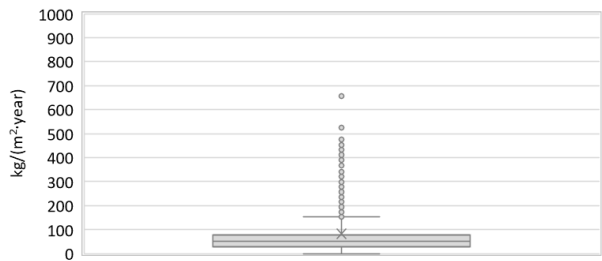## Additional data: other numerical variables that are not included in the archetype
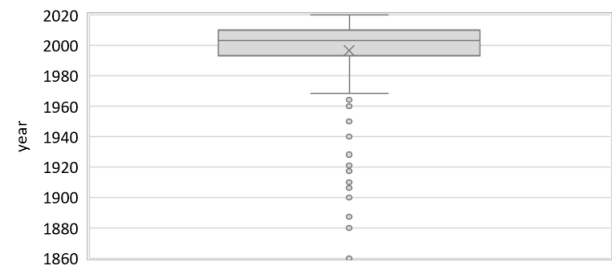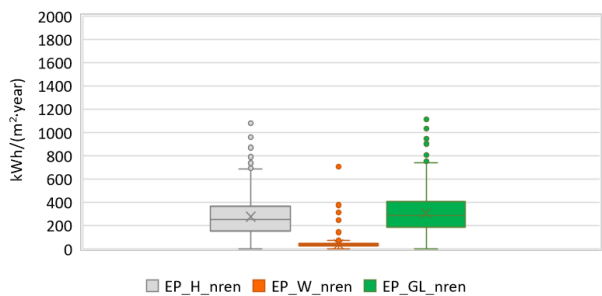
DHW SUPPLY TEMPERATURE

SYSTEM POWER

Heating ■ DHW ■ Cooling
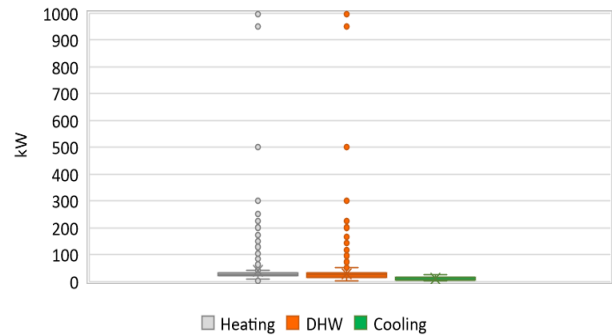
CO₂ EMISSION

HEATING SYSTEM INSTALLATION YEAR

NON-RENEWABLE PRIMARY ENERGY USE

EP_H_nren ■ EP_W_nren ■ EP_GL_nren

RENEWABLE PRIMARY ENERGY USE

EP_H_ren ■ EP_W_ren