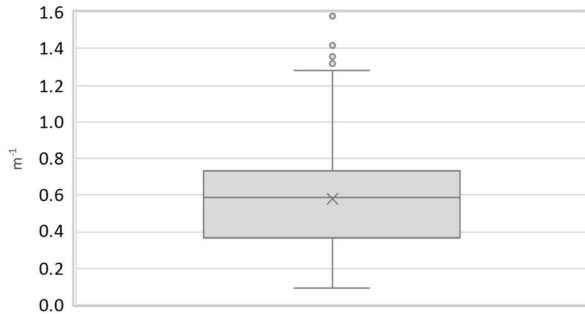


Region:		Liguria					Archetype code: RES_APPBLOCK_ 1991-2000_D_LIG	
Building category:		Residential buildings – Apartments in multi-family block						
Period of construction:		1991-2000						
Climatic zone:		D	Number of records:		1435			
Description: <u>External walls</u> : no data available <u>Roof slabs</u> : no data available							Data sources: EPC databases (100%)	
	Data	Symbol	Unit of measure	Mean value	Standard deviation	Q1 (first quartile)	Q2 (Median value)	Q3 (third quartile)
BUILDING GEOMETRY	Number of floors	$n_f$	-	-	-	-	-	-
	Gross height	$H_g$	m	-	-	-	-	-
	Footprint area	$A_{\text{footprint}}$	m <sup>2</sup>	-	-	-	-	-
	Heated gross floor area	$A_{H,g}$	m <sup>2</sup>	-	-	-	-	-
	Heated net floor area	$A_{H,n}$	m <sup>2</sup>	-	-	-	-	-
	Heated gross volume	$V_{H,g}$	m <sup>3</sup>	-	-	-	-	-
	Heated net volume	$V_{H,n}$	m <sup>3</sup>	-	-	-	-	-
	Compactness ratio	$A_{\text{env}}/V_{H,g}$	m <sup>-1</sup>	0.58	0.24	0.36	0.59	0.73
	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	$A_{wi}/A_{\text{use}}$	-	0.12	0.07	0.09	0.10	0.13
ENVELOPE	Roof type	-						
	U-value of the roof	$U_{fi,up}$	W/(m <sup>2</sup> ·K)	1.23	0.67	0.64	1.24	1.69
	External walls type	-						
	U-value of the wall	$U_{wl}$	W/(m <sup>2</sup> ·K)	1.07	0.49	0.72	1.09	1.27
	Slab on ground floor type	-						
	U-value of the floor	$U_{fi,lw}$	W/(m <sup>2</sup> ·K)	1.43	0.48	1.20	1.50	1.64
	Windows type	-						
	U-value of the windows	$U_w$	W/(m <sup>2</sup> ·K)	3.63	1.13	2.79	3.48	4.48
	Shading system type	-						
GAINS and VENTILATION	Occupancy density *	$O_c$	person/m <sup>2</sup>	UNI EN 16798-1 - Table A.19				
	Lighting power density *	$W_L$	W/m <sup>2</sup>	UNI EN 16798-1 - A.8.3				
	Equipment power density *	$W_A$	W/m <sup>2</sup>	UNI EN 16798-1 - A.8.3				
	Type of ventilation	Natural: 96%; Mechanical: 4%						
	Air exchange rate *	$n$	h <sup>-1</sup>	0.30	0.00	0.30	0.30	0.30
THERMAL SYSTEMS	Heating system type	Unknown: 93%; Autonomous: 7%						
	Heating generator	Traditional boiler: 47%; Unknown: 37%; Condensing boiler: 11%; Air-source heat pump: 3%; Fireplace: 1%; Heat exchanger of district heating/cooling: 1%						
	Daily operating time of the heating system *	$t_H$	h	12	0	12	12	12
	Energy carrier	Natural gas: 38%; Unknown: 38%; Electricity and natural gas: 19%; Electricity: 3%; LPG: 1%; Electricity and solid biomass: 1%						
	Heating emission sub-system	Radiators: 57%; Unknown: 37%; Fan-coil: 3%; Air Ducts: 1%; Radiant panels: 1%; Convectors: 1%						
	Cooling system type	Unknown: 90%; Heat pump air-air: 7%; Heat pump air-water: 2%; Heat pump water-air:1%						
	Daily operating time of the cooling system *	$t_C$	h	-	-	-	-	-
	Cooling emission sub-system	-						
	DHW system type	-						
	DHW generator	Unknown: 81%; Condensing boiler: 10%; Electric boiler: 6%; Natural gas boiler: 1%; Electric heat pump: 1%; Other: 1%						
* These values were not available in the considered sources, and are thus derived from UNI EN Standards								

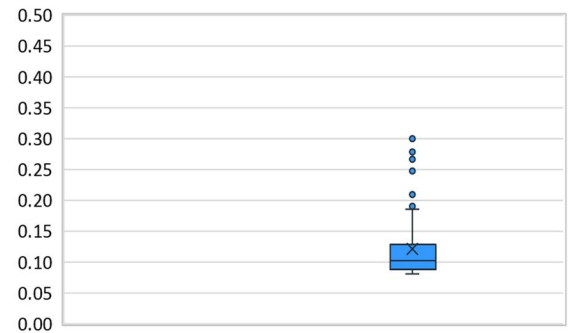
<b>Region:</b>	Liguria	<b>Archetype code:</b> RES_APPBLOCK_ 1991-2000_D_LIG
<b>Building category:</b>	Residential buildings – Apartments in multi-family block	
<b>Period of construction:</b>	1991-2000	
<b>Climatic zone:</b>	D	
<b>Number of records:</b>		1435

### Numerical variables – GEOMETRY

**COMPACTNESS RATIO**



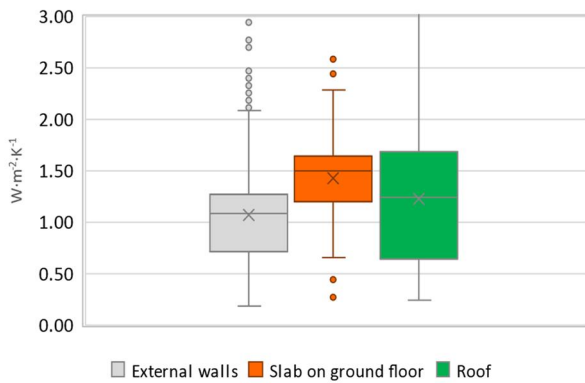
**WINDOWS TO WALL RATIO**



■ WWR\_N ■ WWR\_S ■ WWR\_E ■ WWR\_W ■ Awi/Ause

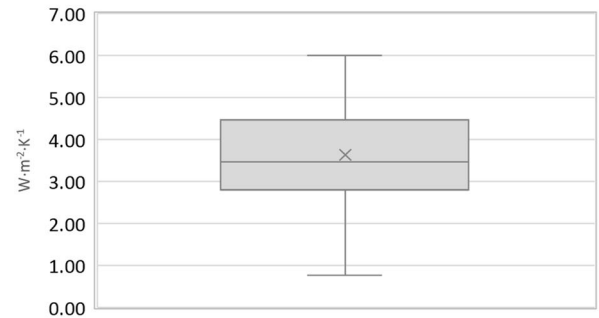
### Numerical variables – ENVELOPE

**OPAQUE BUILDING COMPONENTS U-VALUE**



■ External walls ■ Slab on ground floor ■ Roof

**WINDOWS U-VALUE**

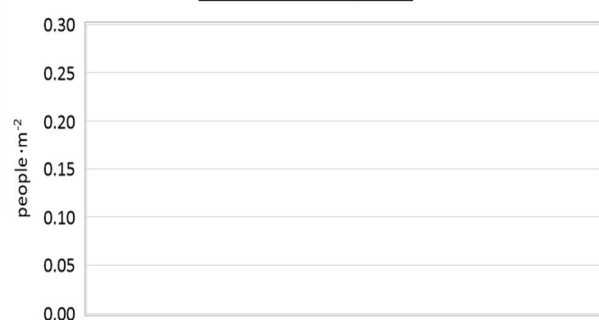


### Numerical variables – GAINS, VENTILATION and SYSTEMS USAGE (Standard Values)

**AIR EXCHANGE RATE**



**OCCUPANCY DENSITY**



**INTERNAL GAINS POWER DENSITY**



**DAILY OPERATING TIME**



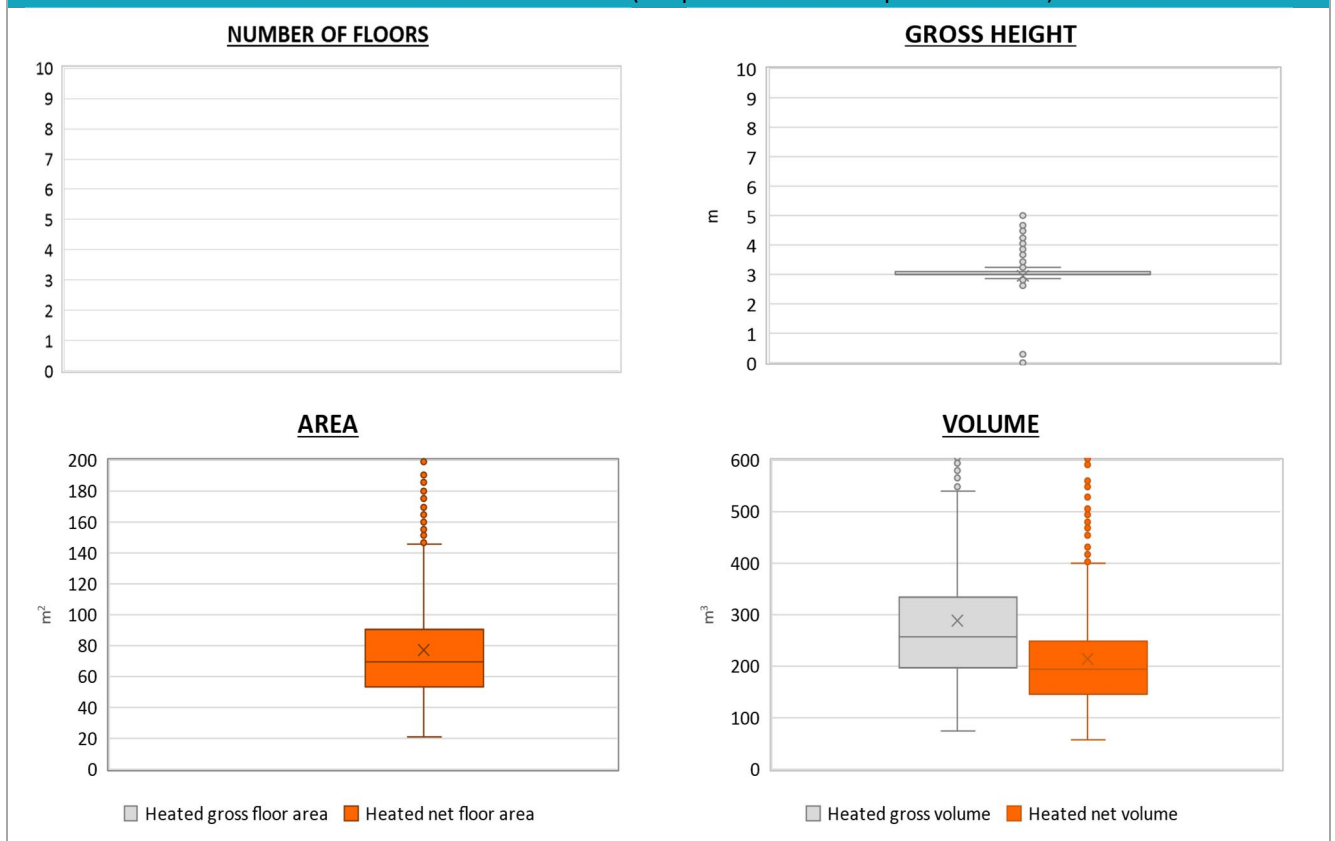
■ Heating ■ Cooling

Region:	Liguria	Archetype code: RES_APPBLOCK_ 1991-2000_D_LIG
Building category:	Residential buildings – Apartments in multi-family block	
Period of construction:	1991-2000	
Climatic zone:	D	
Number of records:		1435

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	3.1	0.3	3.0	3.0	3.1
	Heated gross floor area	$A_{H,g}$	m <sup>2</sup>	-	-	-	-	-
	Heated net floor area	$A_{H,n}$	m <sup>2</sup>	77.3	37.5	53.0	69.4	90.2
	Heated gross volume	$V_{H,g}$	m <sup>3</sup>	289.9	153.8	195.8	255.8	335.3
	Heated net volume	$V_{H,n}$	m <sup>3</sup>	214.4	110.7	147.0	193.0	249.1
THERMAL SYSTEMS	Heating efficiency or <i>COP</i>	$\eta_{H,gen}$ or $COP_{H,gen}$	-	This value has to be retrieved from suitable datasheets				
	Total heating power *	$P_{H,gen}$	kW	23.6	4.3	23.8	24.0	24.2
	Cooling efficiency or <i>EER</i>	$\eta_{C,gen}$ or $EER_{C,gen}$	-	This value has to be retrieved from suitable datasheets				
	Total cooling power *	$P_{C,gen}$	kW	-	-	-	-	-
	Temperature of DHW	$\theta_w$	°C	-	-	-	-	-
	DHW system power *	$P_{W,gen}$	kW	22.2	6.9	23.5	24.0	24.1

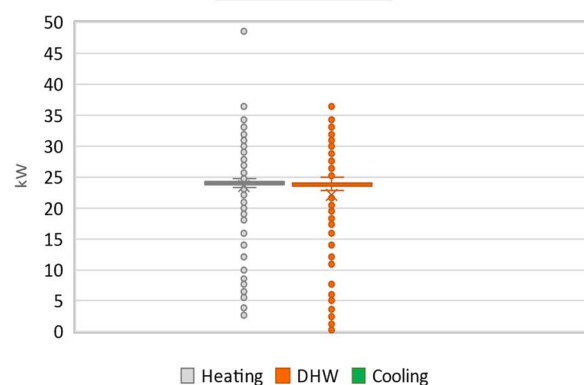
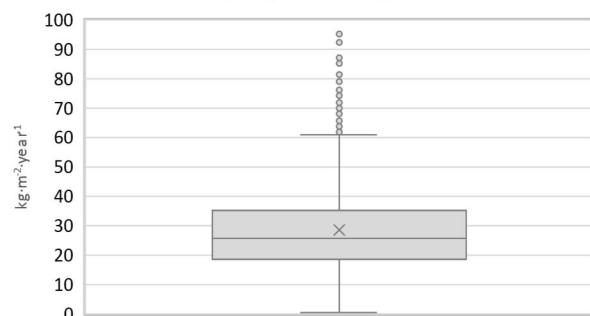
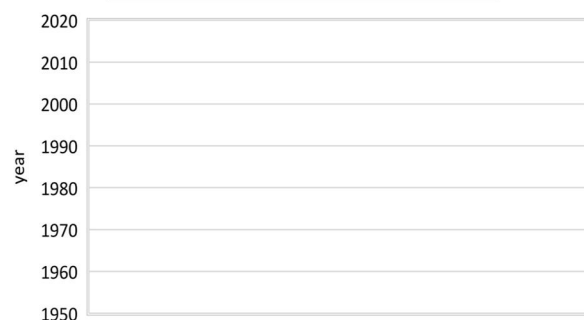
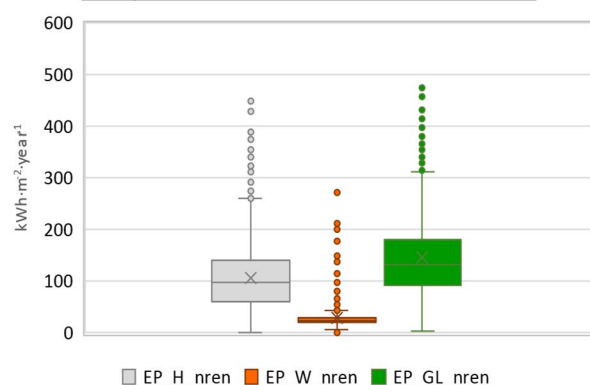
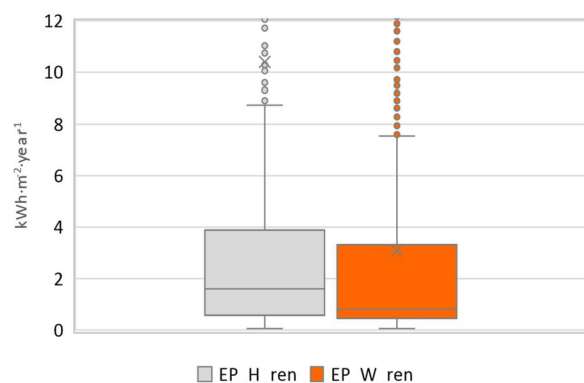
\* These values refer to the apartment scale

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



<b>Region:</b>	Liguria	<b>Archetype code:</b> RES_APPBLOCK_ 1991-2000_D_LIG
<b>Building category:</b>	Residential buildings – Apartments in multi-family block	
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<b>Climatic zone:</b>	D	
<b>Number of records:</b>		1435

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

**SYSTEM POWER**

**CO<sub>2</sub> EMISSION**

**HEATING SYSTEM INSTALLATION YEAR**

**NON-RENEWABLE PRIMARY ENERGY USE**

**RENEWABLE PRIMARY ENERGY USE**


NOTE: Sample size of the analysed data.

Compactness ratio: 1390; Window to useful floor area ratio: 188; U-value of the roof: 327; U-value of the wall: 1258; U-value of the floor: 126; U-value of the windows: 1435; Inter-storey height: 1390; Heated net floor area: 1390; Heated gross volume: 1370; Heated net volume: 1370; Total heating power: 663; DHW system power: 1035; CO<sub>2</sub> Emission: 1392; EP\_H\_nren: 1423; EP\_W\_nren: 1342; EP\_GL\_nren: 1411; EP\_H\_ren: 1056; EP\_W\_ren: 754