| | | | | |
|---|---|---|---|---|
| **Region:** | Liguria | | | **Archetype code:** |
| **Building category:** | Residential buildings – Apartments in multi-family block | | | RES_APPBLOCK_ 1991-2000_E_LIG |
| **Period of construction:** | 1991-2000 | | | |
| **Climatic zone:** | E | **Number of records:** | 155 | |

**Description:**

External walls: no data available
Roof slabs: no data available

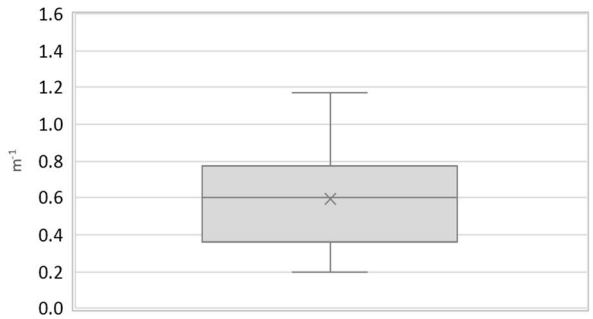
**Data sources:**
EPC databases (100%)

| | 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 | $A_{footprint}$ | $m^2$ | - | - | - | - | - |
| | Heated gross floor area | $A_{H;g}$ | $m^2$ | - | - | - | - | - |
| | Heated net floor area | $A_{H;n}$ | $m^2$ | - | - | - | - | - |
| | Heated gross volume | $V_{H;g}$ | $m^3$ | - | - | - | - | - |
| | Heated net volume | $V_{H;n}$ | $m^3$ | - | - | - | - | - |
| | Compactness ratio | $A_{env}/V_{H;g}$ | $m^{-1}$ | 0.60 | 0.25 | 0.36 | 0.61 | 0.77 |
| | *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 | $A_{wi}/A_{use}$ | - | 0.11 | 0.02 | 0.09 | 0.10 | 0.13 |
| ENVELOPE | Roof type | - | | | | | | |
| | *U*-value of the roof | $U_{fl;up}$ | $W/(m^2 \cdot K)$ | 1.21 | 0.65 | 0.64 | 1.02 | 1.81 |
| | External walls type | - | | | | | | |
| | *U*-value of the wall | $U_{wl}$ | $W/(m^2 \cdot K)$ | 1.18 | 0.71 | 0.61 | 1.09 | 1.50 |
| | Slab on ground floor type | - | | | | | | |
| | *U*-value of the floor | $U_{fl;lw}$ | $W/(m^2 \cdot K)$ | 1.54 | 0.47 | 1.37 | 1.54 | 1.63 |
| | Windows type | - | | | | | | |
| | *U*-value of the windows | $U_W$ | $W/(m^2 \cdot K)$ | 3.77 | 1.18 | 2.90 | 3.65 | 4.71 |
| | Shading system type | - | | | | | | |
| GAINS and VENTILATION | Occupancy density * | $O_C$ | $person/m^2$ | UNI EN 16798-1 - Table A.19 | | | | |
| | Lighting power density * | $W_L$ | $W/m^2$ | UNI EN 16798-1 - A.8.3 | | | | |
| | Equipment power density * | $W_A$ | $W/m^2$ | UNI EN 16798-1 - A.8.3 | | | | |
| | Type of ventilation | Natural: 99%; Mechanical: 1% | | | | | | |
| | Air exchange rate * | $n$ | $h^{-1}$ | 0.30 | 0.00 | 0.30 | 0.30 | 0.30 |
| THERMAL SYSTEMS | Heating system type | Unknown: 89%; Autonomous: 10%; Centralized: 1% | | | | | | |
| | Heating generator | Traditional boiler: 51%; Unknown: 35%; Condensing boiler: 10%; Fireplace: 2%; Electric heating: 2% | | | | | | |
| | Daily operating time of the heating system * | $t_H$ | h | 14 | 0 | 14 | 14 | 14 |
| | Energy carrier | Unknown: 35%; Natural gas: 33%; Electricity and natural gas: 23%; LPG: 5%; Electricity and solid biomass: 2%; Electricity: 2% | | | | | | |
| | Heating emission sub-system | Radiators: 59%; Unknown: 35%; Radiant panels: 3%; Fan-coil: 1%; Air Ducts: 1%; Air Heater:1% | | | | | | |
| | Cooling system type | Unknown: 97%; Heat pump air-air: 1%; Heat pump air-water: 1%; 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: 8%; Electric boiler: 5%; Electric heat pump: 3%; Natural gas boiler: 2%; Solar thermal: 1% | | | | | | |
| | * These values were not available in the considered sources, and are thus derived from UNI EN Standards | | | | | | | |

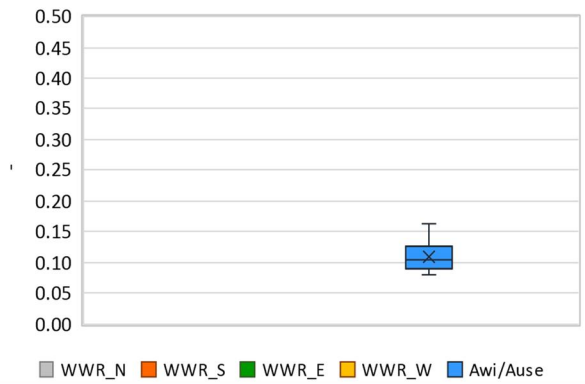
| | | | | |
|---|---|---|---|---|
| **Region:** | Liguria | | | **Archetype code:** RES_APPBLOCK_ 1991-2000_E_LIG |
| **Building category:** | Residential buildings – Apartments in multi-family block | | | |
| **Period of construction:** | 1991-2000 | | | |
| **Climatic zone:** | E | **Number of records:** | 155 | |

## Numerical variables – GEOMETRY

### COMPACTNESS RATIO

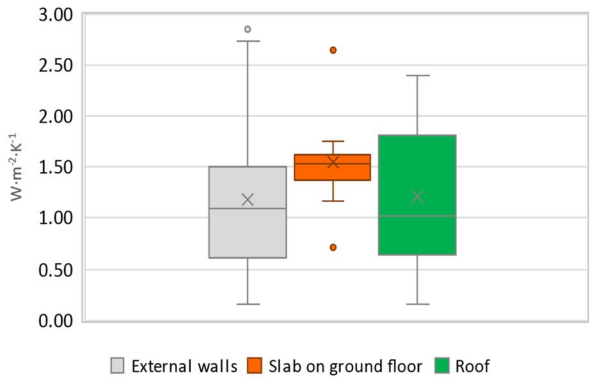



### WINDOWS TO WALL RATIO

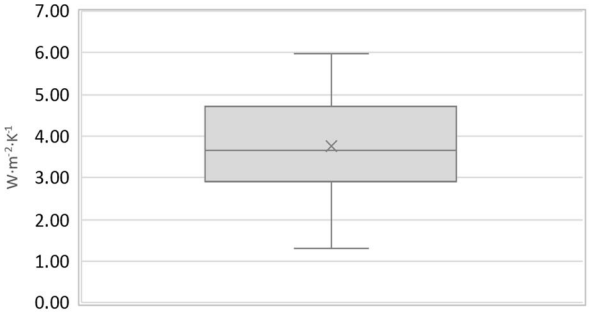



## Numerical variables – ENVELOPE

### OPAQUE BUILDING COMPONENTS U-VALUE




### WINDOWS U-VALUE

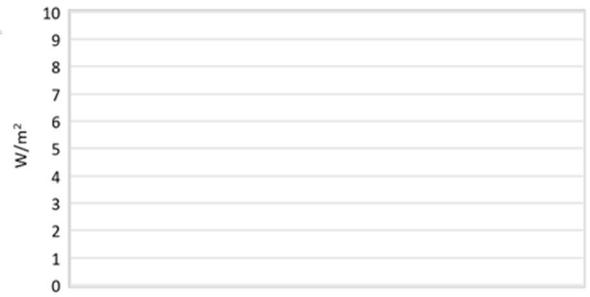



## Numerical variables – GAINS, VENTILATION and SYSTEMS USAGE (Standard Values)

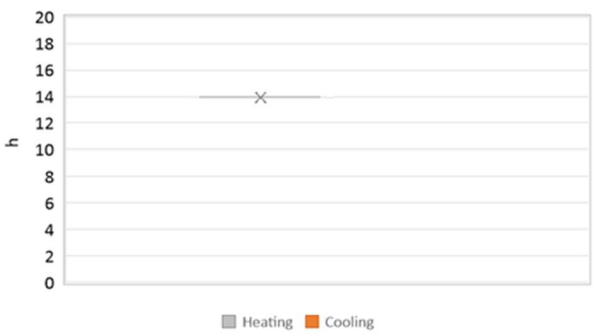
### AIR EXCHANGE RATE


### OCCUPANCY DENSITY


### INTERNAL GAINS POWER DENSITY




### DAILY OPERATING TIME

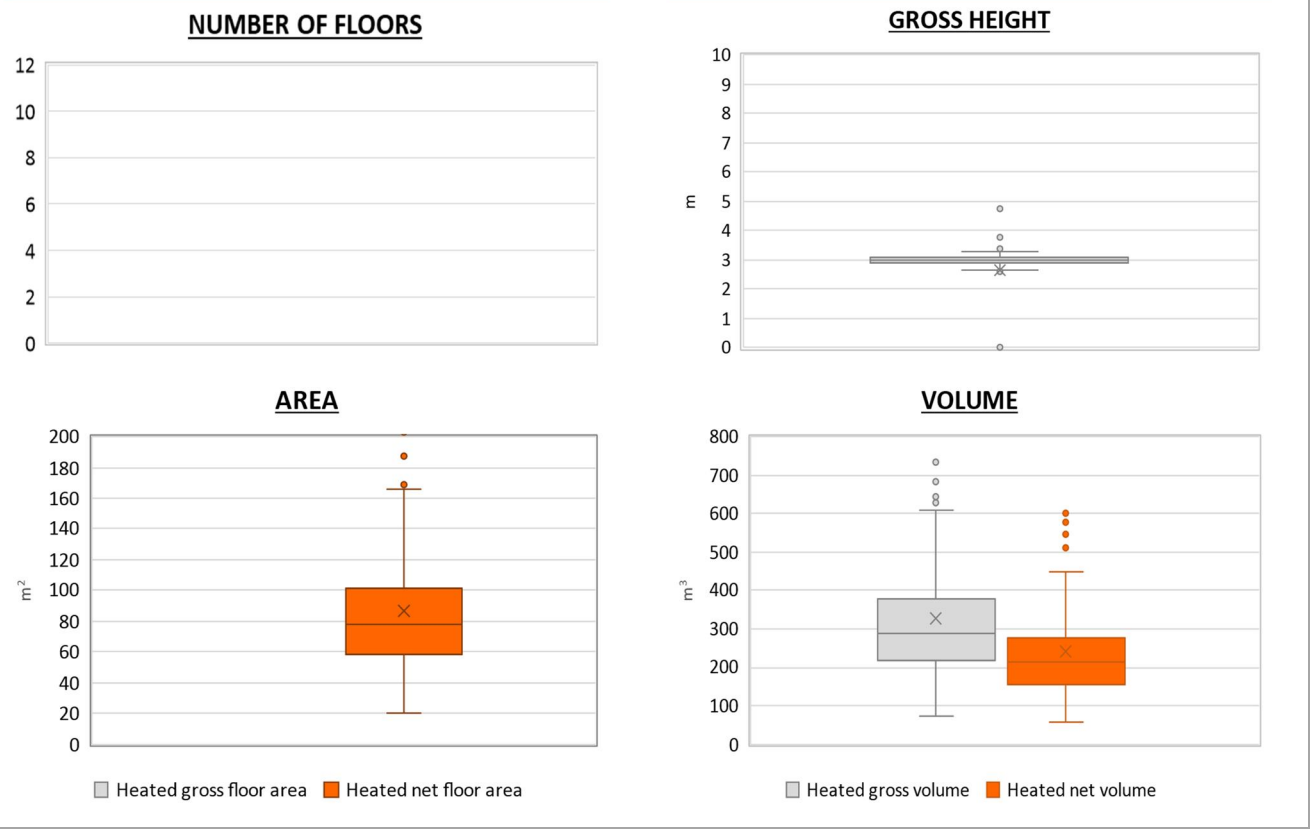


| | | | | |
|---|---|---|---|---|
| **Region:** | Liguria | | | **Archetype code:** |
| **Building category:** | Residential buildings – Apartments in multi-family block | | | RES_APPBLOCK_ 1991-2000_E_LIG |
| **Period of construction:** | 1991-2000 | | | |
| **Climatic zone:** | E | **Number of records:** | 155 | |

**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 | 3.0 | 0.2 | 3.0 | 3.0 | 3.1 |
| | Heated gross floor area | $A_{H;g}$ | m² | - | - | - | - | - |
| | Heated net floor area | $A_{H;n}$ | m² | 86.3 | 46.0 | 58.1 | 78.3 | 101.6 |
| | Heated gross volume | $V_{H;g}$ | m³ | 326.3 | 205.4 | 217.3 | 286.6 | 377.0 |
| | Heated net volume | $V_{H;n}$ | m³ | 240.6 | 164.1 | 155.4 | 213.4 | 275.5 |
| 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 | 24.6 | 4.2 | 23.5 | 24.0 | 26.0 |
| | 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 | - | - | - | - | - |
| | Temperature of DHW | $\theta_W$ | °C | - | - | - | - | - |
| | DHW system power * | $P_{W;gen}$ | kW | 22.2 | 8.3 | 23.3 | 24.0 | 25.8 |
| | * These values refer to the apartment scale | | | | | | | |

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

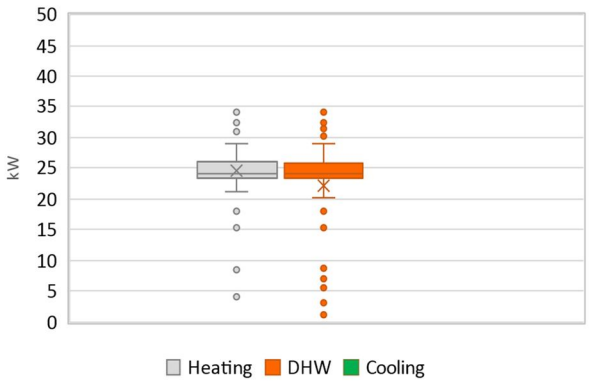


| | | | | |
|---|---|---|---|---|
| **Region:** | Liguria | | | **Archetype code:** |
| **Building category:** | Residential buildings – Apartments in multi-family block | | | RES_APPBLOCK_ 1991-2000_E_LIG |
| **Period of construction:** | 1991-2000 | | | |
| **Climatic zone:** | E | **Number of records:** | 155 | |

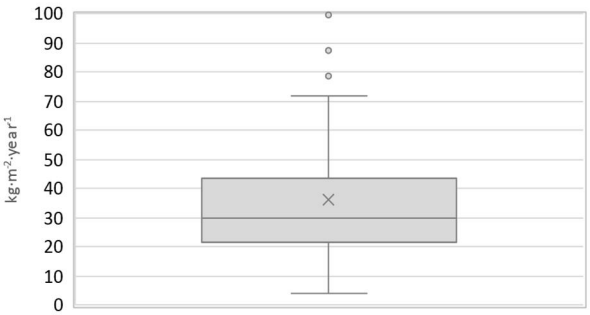
## Additional data: other numerical variables that are not included in the archetype

### DHW SUPPLY TEMPERATURE

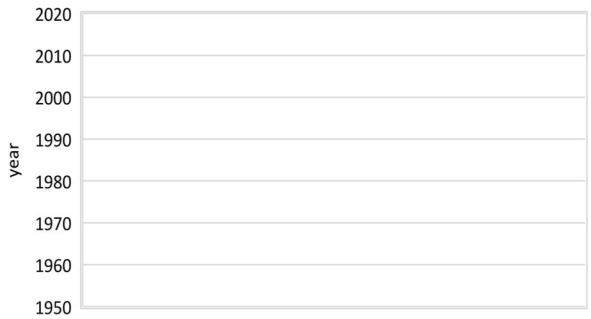

### SYSTEM POWER



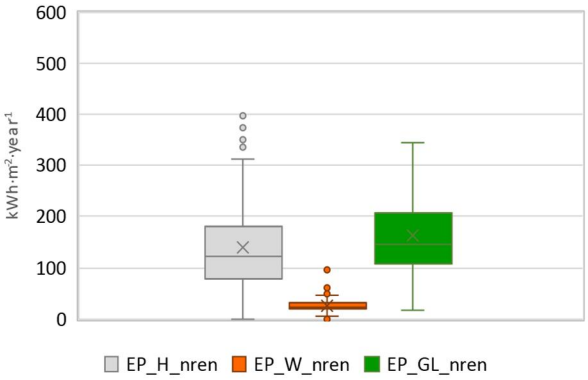

### $CO_2$ EMISSION



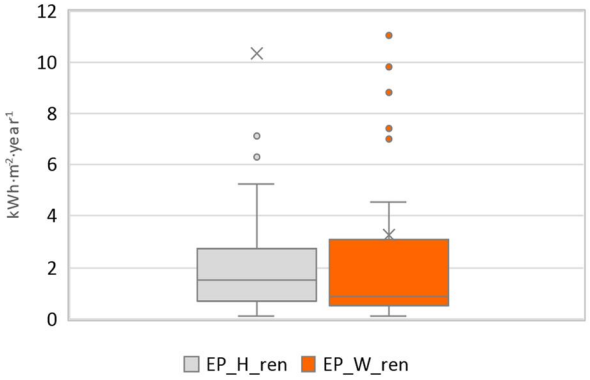

### HEATING SYSTEM INSTALLATION YEAR




### NON-RENEWABLE PRIMARY ENERGY USE




### RENEWABLE PRIMARY ENERGY USE




NOTE: Sample size of the analysed data.

Compactness ratio: 136; Window to useful floor area ratio: 15; U-value of the roof: 45; U-value of the wall: 129; U-value of the floor 11; U-value of the windows: 155; Inter-storey height: 136; Heated net floor area: 136; Heated gross volume: 136; Heated net volume: 136; Total heating power: 82; DHW system power: 113; CO2 Emission: 151; EP_H_nren: 153; EP_W_nren: 136; EP_GL_nren: 146; EP_H_ren: 118; EP_W_ren: 84