| | | | | |
|---|---|---|---|---|
| **Region:** | Piedmont | | | **Archetype code:** RES_SINGLE_1991-2000_F_PIE |
| **Building category:** | Residential buildings - Single family houses | | | |
| **Period of construction:** | 1991-2000 | | | |
| **Climatic zone:** | F | **Number of records:** | 322 | |

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

External walls: hollow brick masonry with thermal insulation (cod. MCV02).
Roof slabs: insulated reinforced concrete floor slab for walkable flat roof (cod. COP03), for pitched roof (cod. CIN03) or insulated wooden floor slab for pitched roof (cod. CIN02).

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

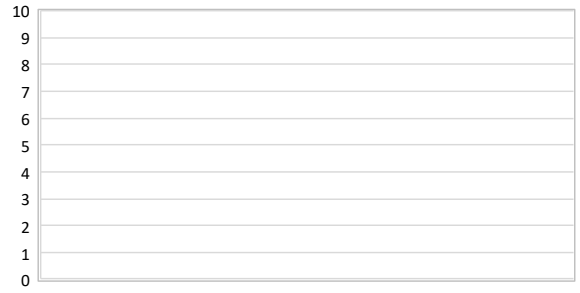
| | Data | Symbol | Unit of measure | Mean value | Standard deviation | Q1 (first quartile) | Median value | Q3 (third quartile) |
|---|---|---|---|---|---|---|---|---|
| BUILDING GEOMETRY | Number of floors | $n_f$ | - | - | - | - | - | - |
| | Gross height | $H_g$ | m | - | - | - | - | - |
| | Footprint area | $A_{footprint}$ | $m^2$ | - | - | - | - | - |
| | Heated gross floor area | $A_{H;g}$ | $m^2$ | - | - | - | - | - |
| | Heated net floor area | $A_{H;n}$ | $m^2$ | 137.2 | 66.9 | 92.4 | 129.3 | 168.6 |
| | Heated gross volume | $V_{H;g}$ | $m^3$ | 527.2 | 255.1 | 358.4 | 493.4 | 654.2 |
| | Heated net volume | $V_{H;n}$ | $m^3$ | - | - | - | - | - |
| | Compactness ratio | $A_{env}/V_{H;g}$ | $m^{-1}$ | 0.82 | 0.22 | 0.70 | 0.82 | 0.96 |
| | *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 | $A_{wi}/A_{use}$ | - | 0.17 | 0.07 | 0.13 | 0.17 | 0.21 |
| ENVELOPE | Roof type | - | | | | | | |
| | *U*-value of the roof | $U_{fl;up}$ | $W/(m^2 \cdot K)$ | - | - | - | - | - |
| | External walls type | Hollow brick masonry: 72%; Solid Brick masonry: 22%; Unknown: 6% | | | | | | |
| | *U*-value of the wall | $U_{wl}$ | $W/(m^2 \cdot K)$ | - | - | - | - | - |
| | Slab on ground floor type | - | | | | | | |
| | *U*-value of the floor | $U_{fl;lw}$ | $W/(m^2 \cdot K)$ | - | - | - | - | - |
| | Windows type | - | | | | | | |
| | *U*-value of the windows | $U_W$ | $W/(m^2 \cdot K)$ | 2.45 | 0.93 | 1.80 | 2.57 | 2.93 |
| | 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: 100% | | | | | | |
| | Air exchange rate * | $n$ | $h^{-1}$ | 0.30 | 0.00 | 0.30 | 0.30 | 0.30 |
| THERMAL SYSTEMS | Heating system type | Autonomous: 100% | | | | | | |
| | Heating generator | - | | | | | | |
| | Daily operating time of the heating system * | $t_H$ | h | No limitation | | | | |
| | Energy carrier | Natural Gas: 58%; Solid biomass: 16%; Electricity: 11%; LPG: 10%; Gas Oil: 5% | | | | | | |
| | Heating emission sub-system | - | | | | | | |
| | Cooling system type | - | | | | | | |
| | Daily operating time of the cooling system * | $t_C$ | h | - | - | - | - | - |
| | Cooling emission sub-system | - | | | | | | |
| | DHW system type | Autonomous, coupled with heating: 79%; Autonomous, detached from heating: 16%; Centralized, coupled with heating: 4%; Centralized, detached from heating: 1% | | | | | | |
| | DHW generator | - | | | | | | |

* These values are derived from UNI EN ISO Standards

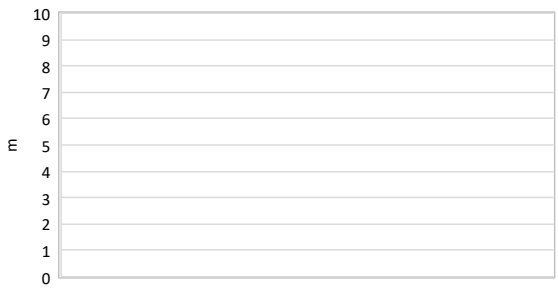
| | | | | |
|---|---|---|---|---|
| **Region:** | Piedmont | | | **Archetype code:** |
| **Building category:** | Residential buildings - Single family houses | | | RES_SINGLE_1991-2000_F_PIE |
| **Period of construction:** | 1991-2000 | | | |
| **Climatic zone:** | F | **Number of records:** | 322 | |

## Numerical variables – GEOMETRY

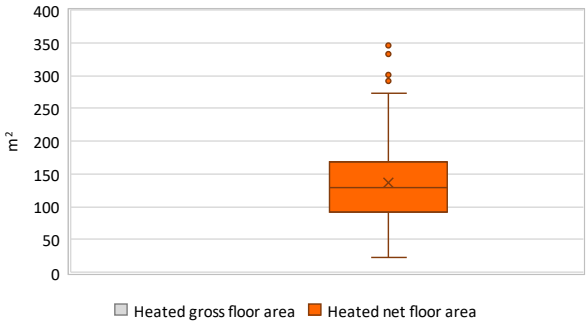
### NUMBER OF FLOORS



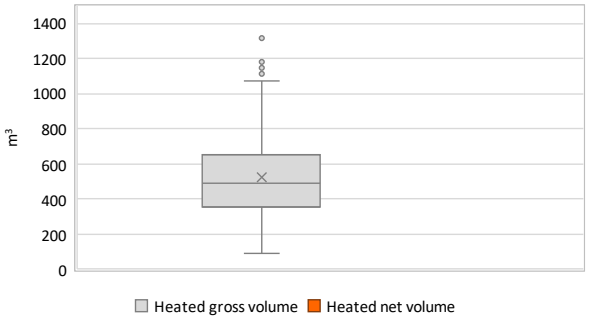

### GROSS HEIGHT



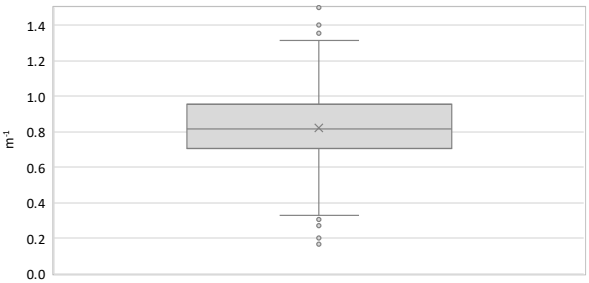

### AREA



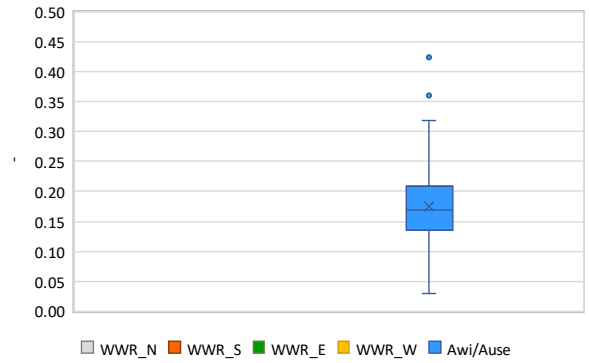

### VOLUME




### COMPACTNESS RATIO

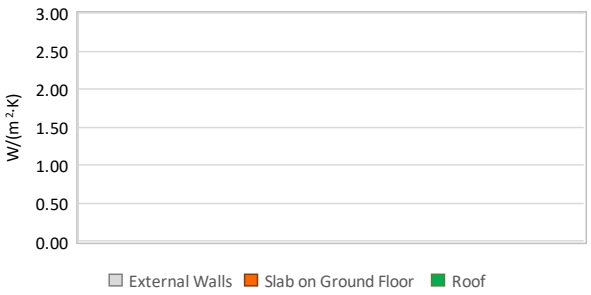



### WINDOWS TO WALL RATIO

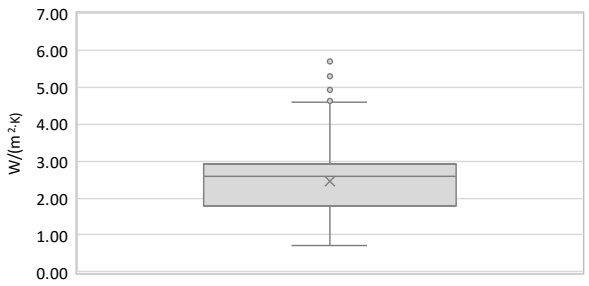



## Numerical variables – ENVELOPE

### OPAQUE BUILDING COMPONENTS U-VALUE




### WINDOWS U-VALUE



| | | | | |
|---|---|---|---|---|
| **Region:** | Piedmont | | | **Archetype code:** |
| **Building category:** | Residential buildings - Single family houses | | | RES_SINGLE_1991-2000_F_PIE |
| **Period of construction:** | 1991-2000 | | | |
| **Climatic zone:** | F | **Number of records:** | 322 | |

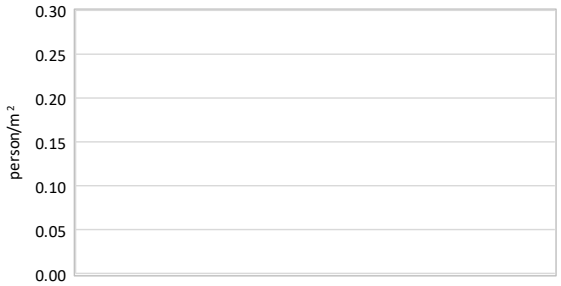
## ADDITIONAL DATA

| | Data | Symbol | Unit of measure | Mean value | Standard deviation | Q1 (first quartile) | Median value | Q3 (third quartile) |
|---|---|---|---|---|---|---|---|---|
| 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 | 27.7 | 15.0 | 24.0 | 27.2 | 31.2 |
| | 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 | 5.8 | 3.7 | 3.3 | 5.0 | 6.0 |
| | Temperature of DHW | $\vartheta_W$ | °C | 40.0 | 0.0 | 40.0 | 40.0 | 40.0 |
| | DHW system power | $P_{W;gen}$ | kW | 25.7 | 13.3 | 23.7 | 26.7 | 31.0 |

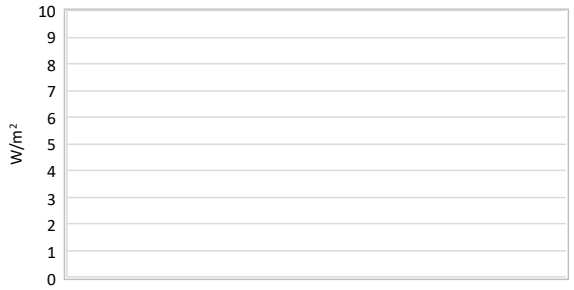
## Additional data: GEOMETRY

**AIR EXCHANGE RATE**

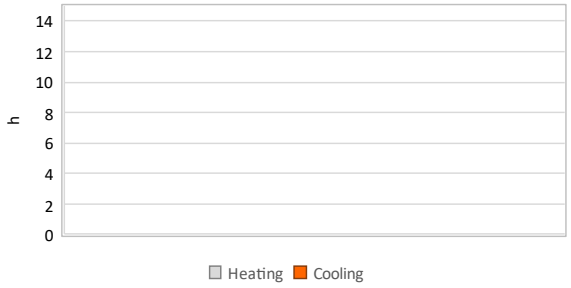

**OCCUPACY DENSITY**




**INTERNAL GAINS POWER DENSITY**




**DAILY OPERATING TIME**

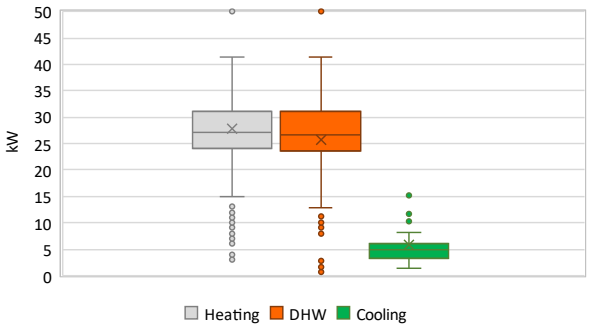


| | | | | |
|---|---|---|---|---|
| **Region:** | Piedmont | | | **Archetype code:** |
| **Building category:** | Residential buildings - Single family houses | | | RES_SINGLE_1991-2000_F_PIE |
| **Period of construction:** | 1991-2000 | | | |
| **Climatic zone:** | F | **Number of records:** | 322 | |

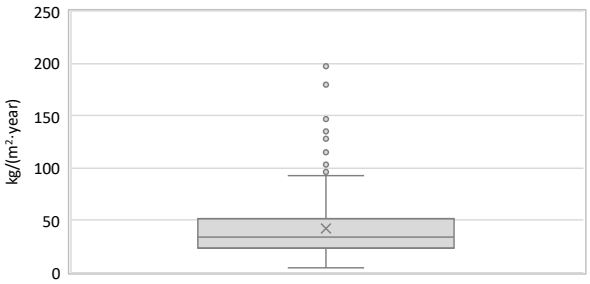
## Additional data: other numerical variables that are not included in the archetype

### DHW SUPPLY TEMPERATURE

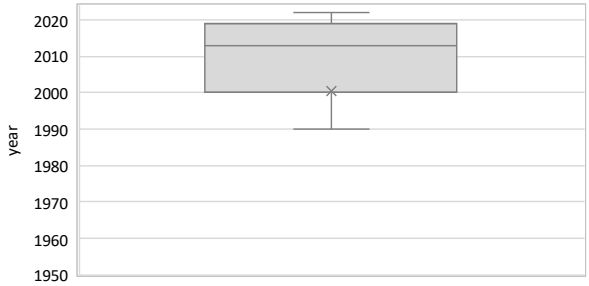

### SYSTEM POWER



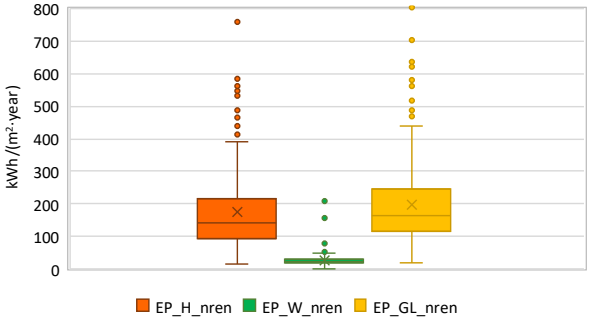

### $CO_2$ EMISSION




### HEATING SYSTEM INSTALLATION YEAR




### NON-RENEWABLE PRIMARY ENERGY USE




### RENEWABLE PRIMARY ENERGY USE