| | | | | |
|---|---|---|---|---|
| **Region:** | Aosta Valley (Aosta, Quart, Saint-Christophe, and Sarre) | | | **Archetype code:** RES_APPBLOCK_1962-1971_E_VAL |
| **Building category:** | Residential buildings - Apartments (in multifamily blocks) | | | |
| **Period of construction:** | 1962 - 1971 | | | |
| **Climatic zone:** | E | **Number of records:** | 2152 | |

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

External walls: hollow brick masonry with air gap (cod. MCV01).
Roof slabs: reinforced concrete floor slab (cod. SOL04).

**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 | $A_{H;n}$ | $m^2$ | - | - | - | - | - |
| | Heated gross volume | $V_{H;g}$ | $m^3$ | - | - | - | - | - |
| | Heated net volume | $V_{H;n}$ | $m^3$ | - | - | - | - | - |
| | Compactness ratio | $A_{env}/V_{H;g}$ | $m^{-1}$ | 0.46 | 0.21 | 0.30 | 0.38 | 0.62 |
| | *WWR* – North orientation | $WWR_N$ | - | 0.14 | 0.04 | 0.11 | 0.14 | 0.16 |
| | *WWR* – South orientation | $WWR_S$ | - | 0.14 | 0.04 | 0.11 | 0.14 | 0.16 |
| | *WWR* – East orientation | $WWR_E$ | - | 0.14 | 0.04 | 0.11 | 0.14 | 0.16 |
| | *WWR* – West orientation | $WWR_W$ | - | 0.14 | 0.04 | 0.11 | 0.14 | 0.16 |
| | Window to useful floor area ratio | $A_{wi}/A_{use}$ | - | 0.17 | 0.05 | 0.14 | 0.16 | 0.19 |
| ENVELOPE | Roof type | - | | | | | | |
| | *U*-value of the roof ** | $U_{fl;up}$ | $W/(m^2 \cdot K)$ | 1.24 | 0.43 | 1.10 | 1.32 | 1.42 |
| | External walls type | Hollow brick masonry: 82%; Solid Brick masonry: 13%; Masonry with local stones: 3%; Unknown: 1%; Concrete wall: 1% | | | | | | |
| | *U*-value of the wall | $U_{wl}$ | $W/(m^2 \cdot K)$ | 1.07 | 0.31 | 0.89 | 1.12 | 1.23 |
| | Slab on ground floor type | - | | | | | | |
| | *U*-value of the floor ** | $U_{fl;lw}$ | $W/(m^2 \cdot K)$ | 1.13 | 0.21 | 1.11 | 1.14 | 1.19 |
| | Windows type | Double glazing, wooden frame: 40%; Single glazing, wooden frame: 29%; Double glazing, PVC frame: 29%; Triple glazing, PVC frame: 2% | | | | | | |
| | *U*-value of the windows | $U_W$ | $W/(m^2 \cdot K)$ | 2.96 | 1.16 | 2.16 | 2.77 | 3.32 |
| | 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 | Centralized: 86%; Autonomous: 14% | | | | | | |
| | Heating generator | Boiler (unknown type): 53%; Heat exchanger of district heating/cooling: 16%; Condensing Boiler: 16%; Traditional Boiler: 13%; Fireplace: 1%; Air-source heat pump: 1% | | | | | | |
| | Daily operating time of the heating system * | $t_H$ | h | 14.0 | 0.0 | 14.0 | 14.0 | 14.0 |
| | Energy carrier | Natural Gas: 57%; Gas Oil: 27%; District heating: 12%; LPG: 2%; Solid biomass: 2% | | | | | | |
| | Heating emission sub-system | - | | | | | | |
| | Cooling system type | Absent: 99%; Air-cooled chiller: 1% | | | | | | |
| | Daily operating time of the cooling system * | $t_C$ | h | - | - | - | - | - |
| | Cooling emission sub-system | - | | | | | | |
| | DHW system type | Autonomous, detached from heating: 61%; Centralized, coupled with heating: 26%; Autonomous, coupled with heating: 11%; Centralized, detached from heating: 2% | | | | | | |
| | DHW generator | Unknown: 63%; Electric boiler: 21%; Natural gas boiler: 15%; Electric Heat Pump: 1% | | | | | | |

* These values are derived from UNI EN ISO Standards; ** *U*-values of the upper and lower slabs face unconditioned spaces (i.e., attic, basement, etc.)

| | | | | |
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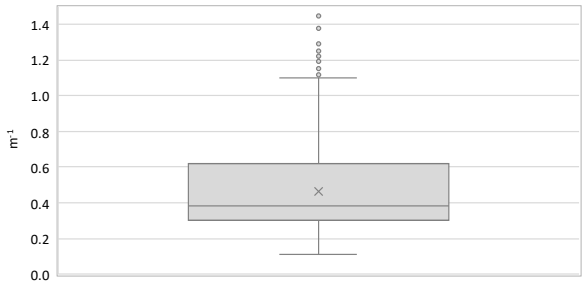
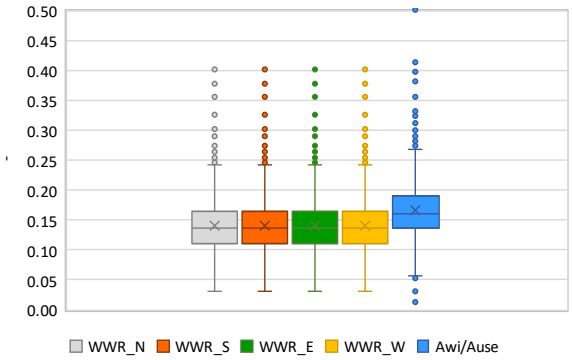
| **Period of construction:** | 1962 - 1971 | | | |
| **Climatic zone:** | E | **Number of records:** | 2152 | |

## Numerical variables – GEOMETRY

### COMPACTNESS RATIO



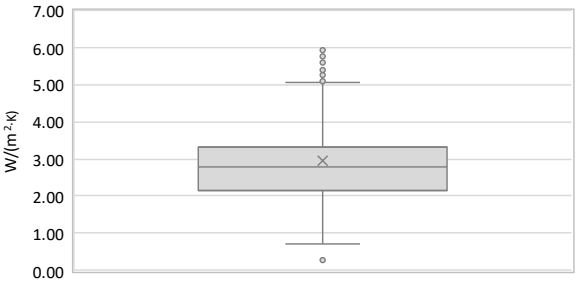

### WINDOWS TO WALL RATIO




## Numerical variables – ENVELOPE

### OPAQUE BUILDING COMPONENTS U-VALUE

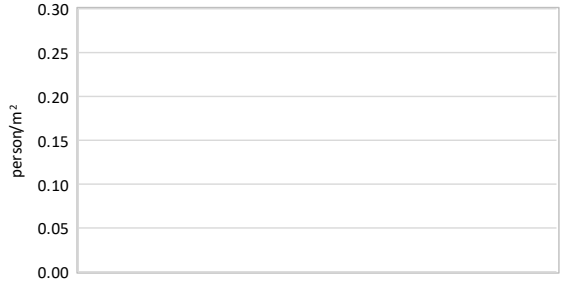

### WINDOWS U-VALUE



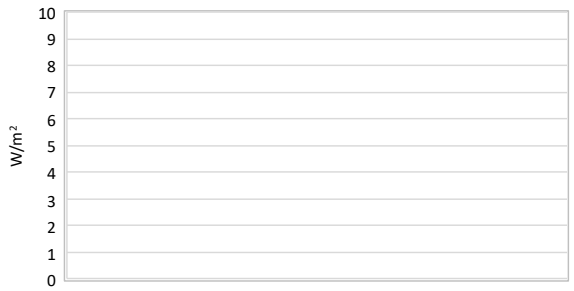

## Numerical variables – GAINS, VENTILATION and SYSTEMS USAGE

### AIR EXCHANGE RATE

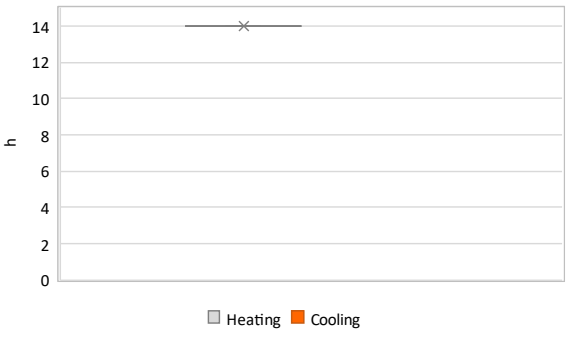

### OCCUPACY DENSITY




### INTERNAL GAINS POWER DENSITY




### DAILY OPERATING TIME



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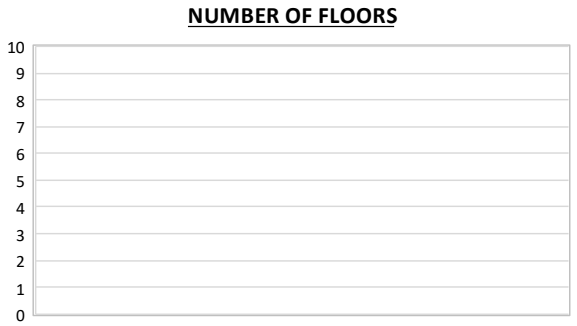
| **Period of construction:** | 1962 - 1971 | | | |
| **Climatic zone:** | E | **Number of records:** | 2152 | |

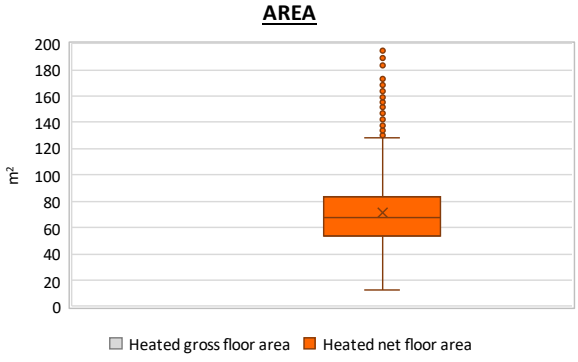
## ADDITIONAL DATA

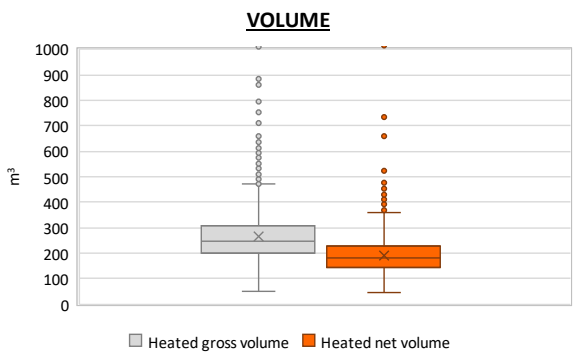
| | Data | Symbol | Unit of measure | Mean value | Standard deviation | Q1 (first quartile) | Median value | Q3 (third quartile) |
|---|---|---|---|---|---|---|---|---|
| GEOMETRY: apartments | Inter-storey height | $H_n$ | m | 2.7 | 0.2 | 2.7 | 2.7 | 2.8 |
| | Heated gross floor area | $A_{H;g}$ | $m^2$ | - | - | - | - | - |
| | Heated net floor area | $A_{H;n}$ | $m^2$ | 71.2 | 27.8 | 53.8 | 67.4 | 83.9 |
| | Heated gross volume | $V_{H;g}$ | $m^3$ | 264.0 | 106.6 | 199.8 | 247.5 | 308.1 |
| | Heated net volume | $V_{H;n}$ | $m^3$ | 191.8 | 80.7 | 142.0 | 179.1 | 230.2 |
| 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 | 22.7 | 7.6 | 21.0 | 24.0 | 27.9 |
| | 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 | 6.6 | 5.4 | 3.2 | 4.8 | 7.7 |
| | Temperature of DHW | $\vartheta_W$ | °C | 40.0 | 0.0 | 40.0 | 40.0 | 40.0 |
| | DHW system power * | $P_{W;gen}$ | kW | 6.6 | 9.8 | 1.2 | 1.5 | 3.0 |
| | * These values refer to the apartment scale | | | | | | | |

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







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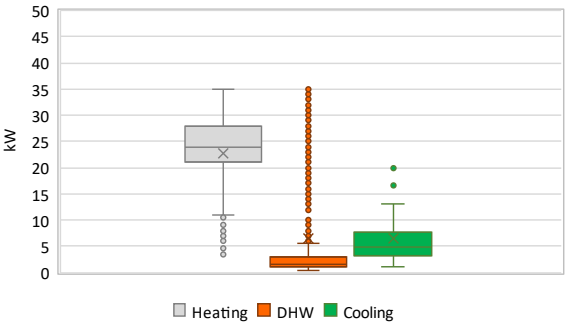
| **Climatic zone:** | E | **Number of records:** | 2152 | |

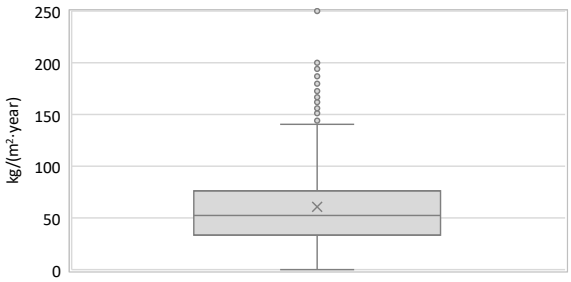
## Additional data: other numerical variables that are not included in the archetype

### DHW SUPPLY TEMPERATURE

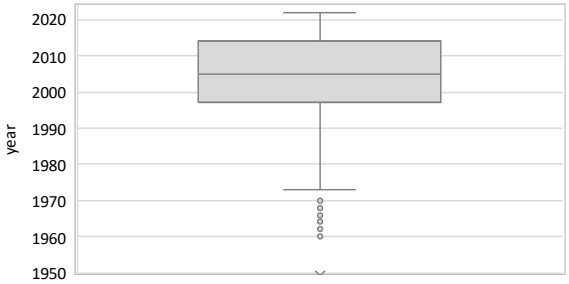

### SYSTEM POWER



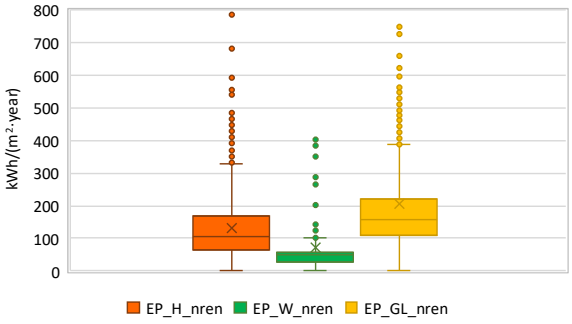

### $CO_2$ EMISSION




### HEATING SYSTEM INSTALLATION YEAR




### NON-RENEWABLE PRIMARY ENERGY USE




### RENEWABLE PRIMARY ENERGY USE