

 Region:
 Piedmont
 Archetype code:

 Building category:
 Non-residential buildings - Educational buildings
 EDUC\_-1950\_F\_PIE

 Period of construction:
 < 1950</td>

 Climatic zone:
 F
 Number of records:
 14

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

<u>External walls</u>: solid brick masonry (cod. MLP01). <u>Roof slabs</u>: pitched wooden roof (cod. CIN05).

Data sources: EPC databases (100%)

	Data	Symbol	Unit of	Mean	Standard	Q1 (first	Median	Q3 (third	
		<b>- 7</b>	measure	value	deviation	quartile)	value	quartile)	
BUILDING GEOMETRY	Number of floors	n <sub>f</sub>	-	-	-	-	-	-	
	Gross height	Hg	m	-	-	-	-	-	
	Footprint area	A <sub>footprint</sub>	m <sup>2</sup>	-	-	-	-	-	
	Heated gross floor area	A <sub>H;g</sub>	m <sup>2</sup>	-	-	-	-	-	
	Heated net floor area	A <sub>H;n</sub>	m <sup>2</sup>	870.6	950.5	375.2	576.3	992.7	
	Heated gross volume	V <sub>H;g</sub>	m³	4115.1	4703.3	1683.8	2714.1	4466.3	
	Heated net volume	V <sub>H;n</sub>	m³	-	-	-	-	-	
9	Compactness ratio	A <sub>env</sub> /V <sub>H;g</sub>	m <sup>-1</sup>	0.54	0.17	0.45	0.52	0.59	
<u> </u>	WWR – North orientation	WWR <sub>N</sub>	-	-	-	-	-	-	
5	WWR – South orientation	WWR <sub>s</sub>	-	-	-	-	-	-	
	WWR – East orientation	WWR <sub>E</sub>	-	-	-	-	-	-	
	WWR – West orientation	WWR <sub>W</sub>	-	-	-	-	-	-	
	Window to useful floor area ratio	A <sub>wi</sub> /A <sub>use</sub>	-	0.16	0.06	0.14	0.17	0.18	
	Roof type				-				
	<i>U</i> -value of the roof	U <sub>fl;up</sub>	W/(m <sup>2</sup> ·K)	-	-	-	-	-	
	External walls type	.,,-,	Solid Brick masonry: 71%; Hollow brick masonry: 14%; Unknown: 15%						
PE	<i>U</i> -value of the wall	U <sub>wl</sub>	W/(m <sup>2</sup> ·K)	-	-	-	-	-	
ENVELOPE	Slab on ground floor type		, , ,	ı	-				
<u> </u>	<i>U</i> -value of the floor	U <sub>fl;lw</sub>	W/(m <sup>2</sup> ·K)	-	-	-	-	-	
	Windows type	-							
	<i>U</i> -value of the windows	U <sub>W</sub>	W/(m <sup>2</sup> ·K)	2.92	1.16	2.04	2.99	3.88	
	Shading system type		, , ,	ı	-				
	Occupancy density *	O <sub>C</sub> person/m <sup>2</sup> UNI EN 16798-1 - Table A.19							
GAINS and	Lighting power density *	W <sub>L</sub>	W/m <sup>2</sup>	UNI EN 16798-1 - A.8.3					
GAINS and ENTILATION	Equipment power density *	W <sub>A</sub>							
A E	Type of ventilation		•	-					
о <u>я</u>	Air exchange rate *	n	h <sup>-1</sup>	-	-	-	-	-	
	Heating system type			Autonomous: 100%					
	Heating generator	-							
	Daily operating time of the heating system *	t <sub>H</sub>	h	No limitation					
"	Energy carrier	Natural Gas: 67%; District heating: 20%; Electricity: 7%; Solid biomass: 6%							
THERMAL SYSTEMS	Heating emission sub- system	-							
	Cooling system type				-				
	Daily operating time of the cooling system *	t <sub>C</sub>	h	-	-	-	-	-	
Ē	Cooling emission sub- system								
	DHW system type	Autonomous, detached from heating: 43%; Centralized, coupled with heating: 43%; Centralized, detached from heating: 14%							
	DHW generator	<u>-</u>							
	* These values are derived from UNI EN ISO Standards								



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The data can be used for analysis, modeling, and research purposes, as long as it remains unaltered in its original form. Users are free to publish results based on the data, provided they credit the original source.



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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	$\eta_{\sf H;gen}$ or $COP_{\sf H;gen}$	-	This value has to be retrieved from suitable datasheets				
	Total heating power	P <sub>H;gen</sub>	kW	147.8	136.9	65.5	104.1	170.0
	Cooling efficiency or EER	$\eta_{ extsf{C}; extsf{gen}}$ or $ extsf{\textit{EER}}_{ extsf{C}; extsf{gen}}$	-	This value has to be retrieved from suitable datasheets				
	Total cooling power	P <sub>C;gen</sub>	kW	6.8	0.0	6.8	6.8	6.8
	Temperature of DHW	ϑw	°C	40.0	0.0	40.0	40.0	40.0
É	DHW system power	P <sub>W;gen</sub>	kW	49.7	57.3	1.7	28.0	78.6

## Numerical variables - GAINS, VENTILATION and SYSTEMS USAGE **AIR CHANGE RATE OCCUPACY DENSITY** 5.00 0.30 4.50 0.25 4.00 3.50 0.20 3.00 2.50 0.15 2.00 0.10 1.50 1.00 0.05 0.50 0.00 0.00 **INTERNAL GAINS POWER DENSITY DAILY OPERATING TIME** 10 14 12 8 10 8 6 5 4 3 2 2 1 $\square$ Heating $\blacksquare$ Cooling



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