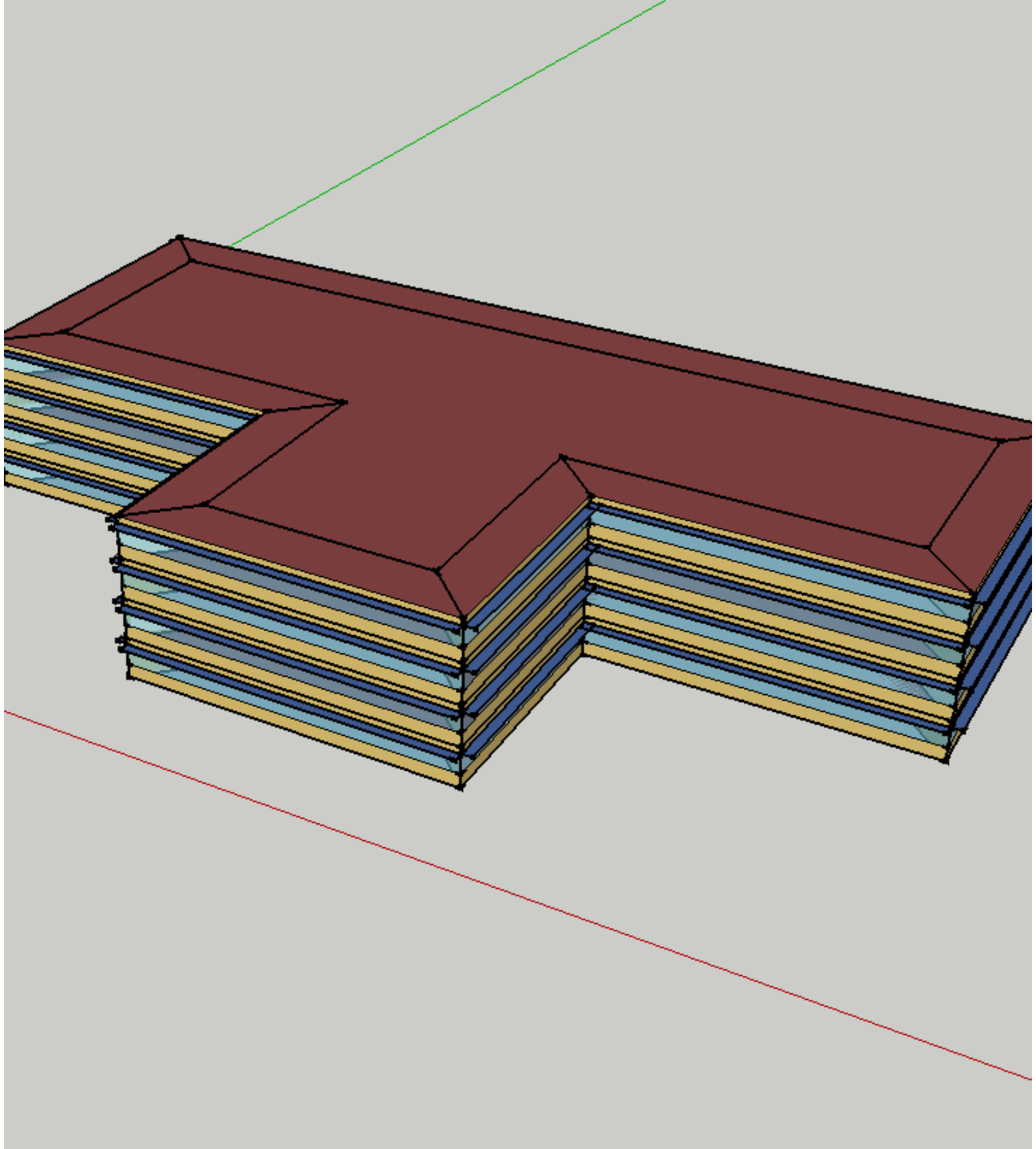
Group W21

Bahrami Negin
Kouhkan Hamed
Nafisi Poor Pedram

Group W21



Function: Office

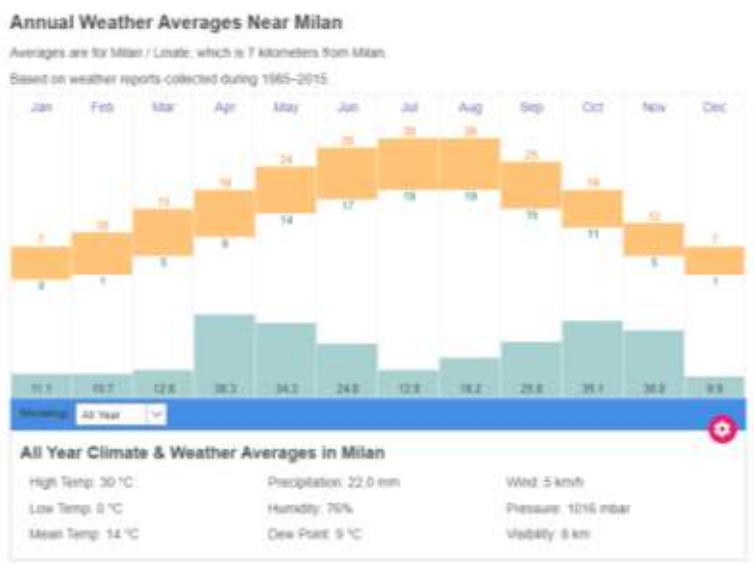
Area: 9200 Sqm

Floors: 4

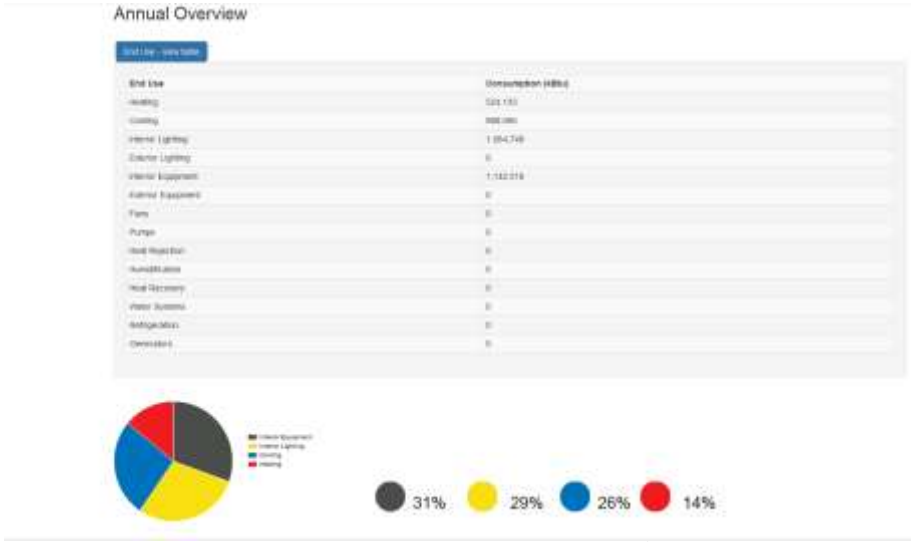
Milan

- Case 1
- Materials Used:
  - 1IN Stucco
  - 8IN Concrete
  - Wall Insulation
  - ½ Gypsum

Group W21



Weather Data



Annual Overview

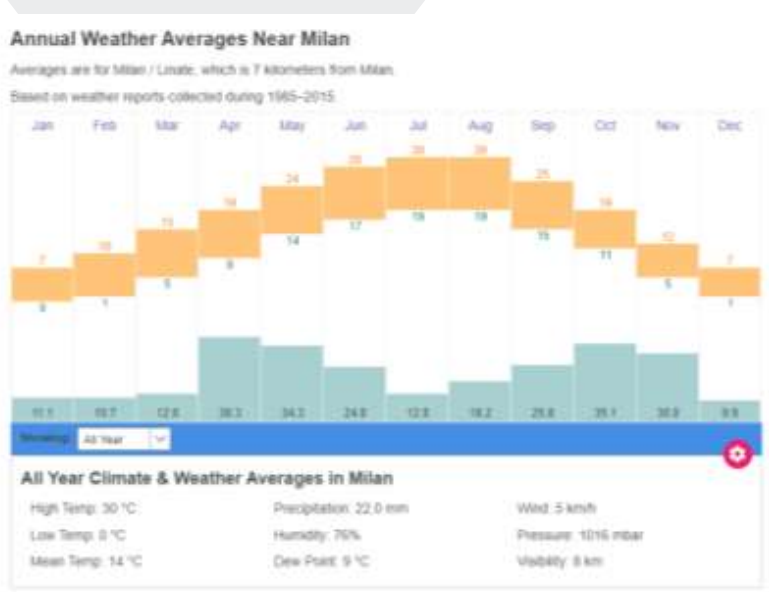
Site and Source Energy

	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]	Energy Per Conditioned Building Area [MJ/m2]
Total Site Energy	3946.41	426.64	426.64
Net Site Energy	3946.41	426.64	426.64
Total Source Energy	10541.86	1139.66	1139.66
Net Source Energy	10541.86	1139.66	1139.66

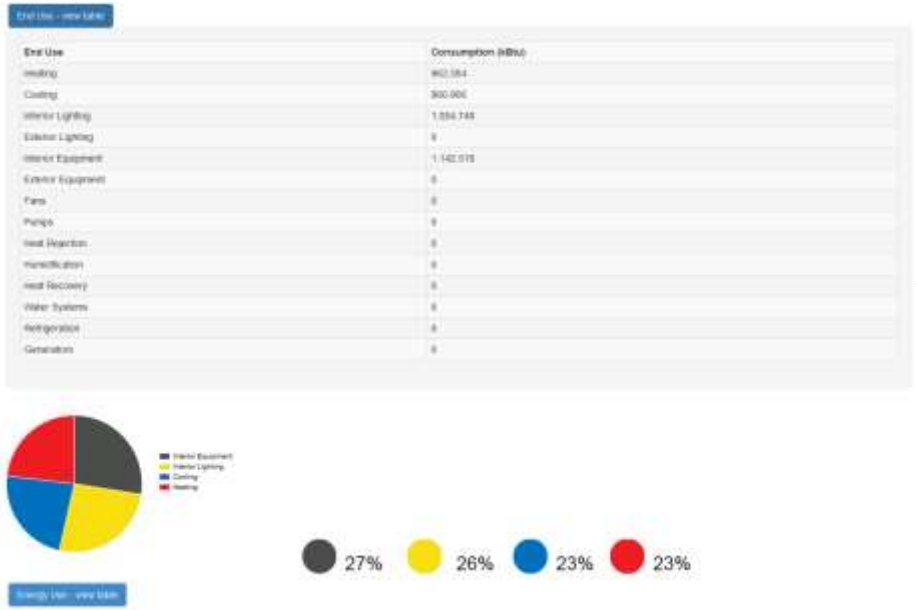
Energy plus result

Milan

- Case 2
- Materials Used:
  - Wood G05 25mm



Weather Data



Annual Overview

Site and Source Energy

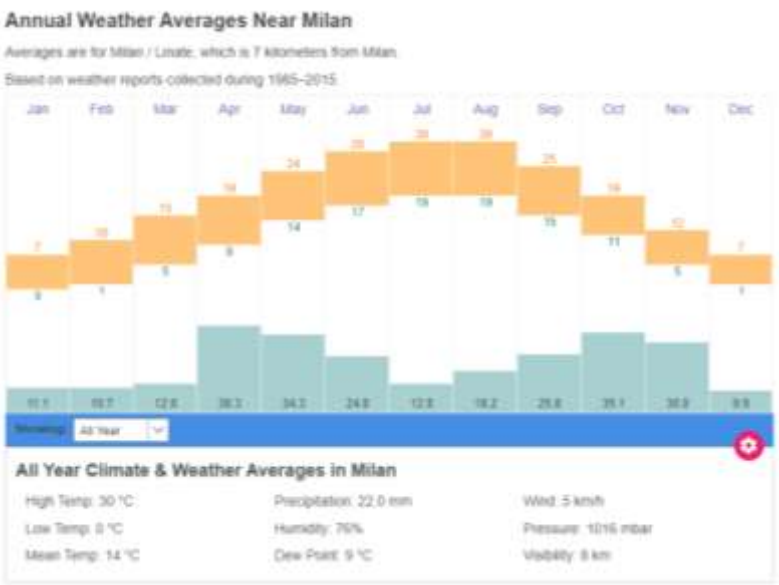
	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]	Energy Per Conditioned Building Area [MJ/m2]
Total Site Energy	4385.62	474.12	474.12
Net Site Energy	4385.62	474.12	474.12
Total Source Energy	12188.68	1317.70	1317.70
Net Source Energy	12188.68	1317.70	1317.70

Energy plus result

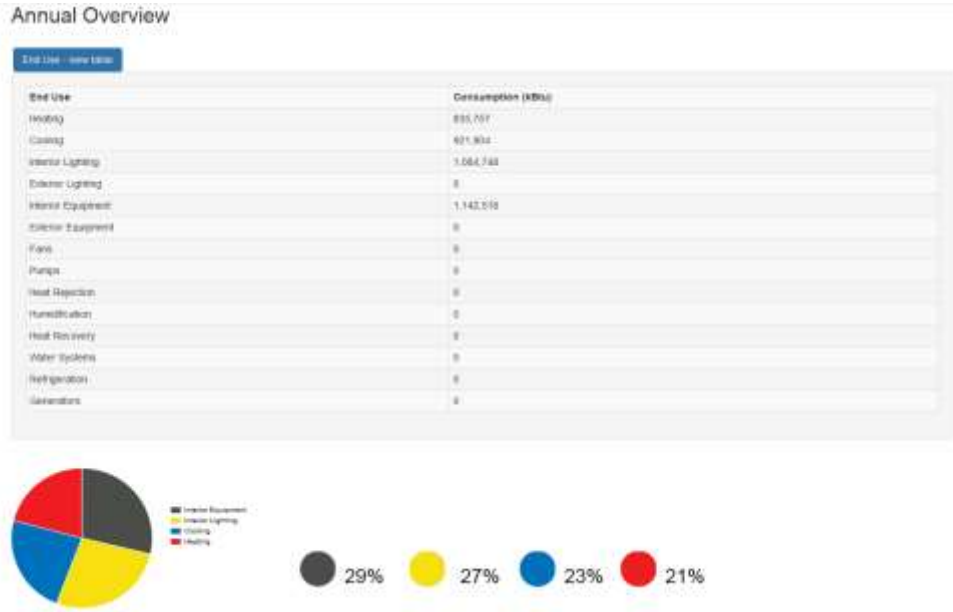
Milan

- Case 3
- Materials Used:
  - M11 100MM lightweight Concrete
  - ½ Gypsum

Group W21



Weather Data



Annual Overview

Site and Source Energy

	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]	Energy Per Conditioned Building Area [MJ/m2]
Total Site Energy	4204.34	454.52	454.52
Net Site Energy	4204.34	454.52	454.52
Total Source Energy	11655.08	1260.01	1260.01
Net Source Energy	11655.08	1260.01	1260.01

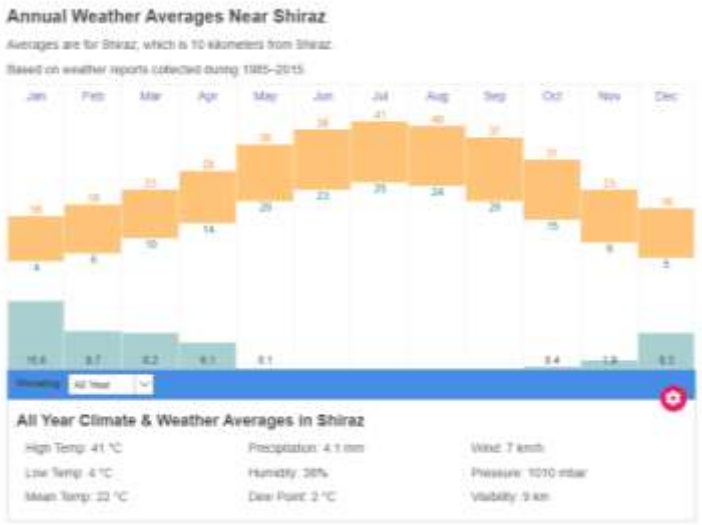
Energy plus result

Shiraz

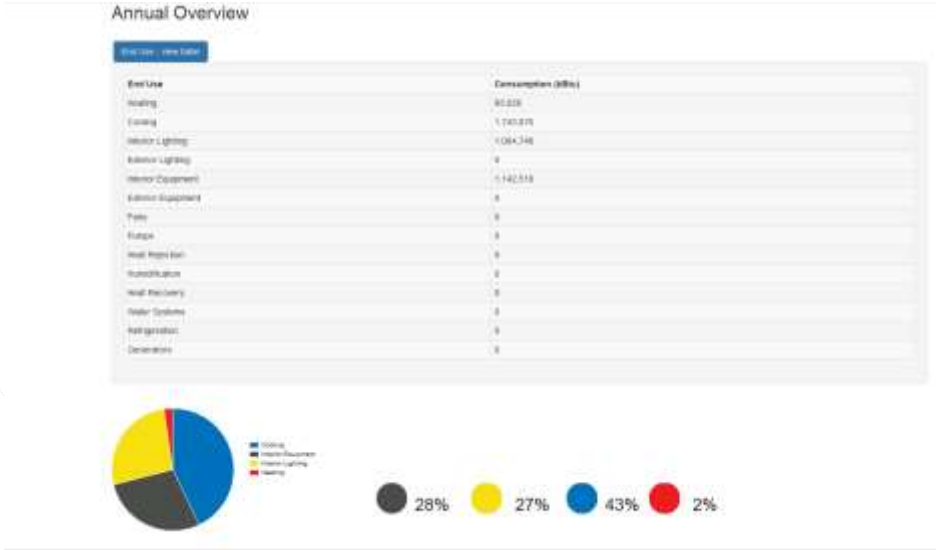
Materials Used:

- 1IN Stucco
- 8IN Concrete
- Wall Insulation
- ½ Gypsum

Group W21



Weather Data



Annual Overview

Site and Source Energy

	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]	Energy Per Conditioned Building Area [MJ/m2]
Total Site Energy	4287.93	463.56	463.56
Net Site Energy	4287.93	463.56	463.56
Total Source Energy	9739.07	1052.87	1052.87
Net Source Energy	9739.07	1052.87	1052.87

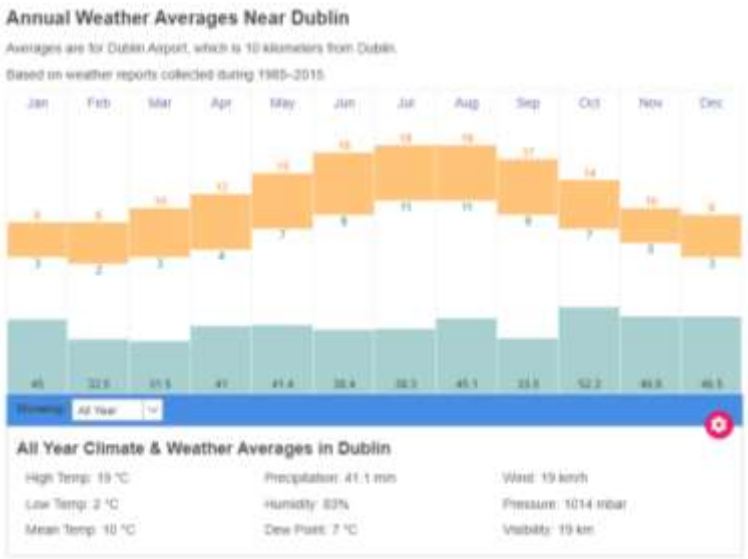
Energy plus result

Dublin

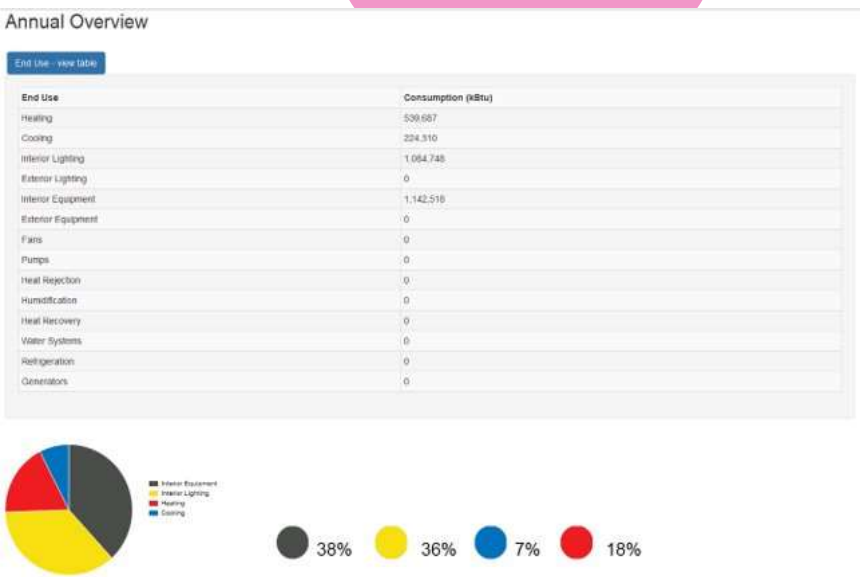
Materials Used:

- 1IN Stucco
- 8IN Concrete
- Wall Insulation
- ½ Gypsum

Group W21



Weather Data



Annual Overview

Site and Source Energy

	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]	Energy Per Conditioned Building Area [MJ/m2]
Total Site Energy	3155.96	341.18	341.18
Net Site Energy	3155.96	341.18	341.18
Total Source Energy	9749.40	1053.99	1053.99
Net Source Energy	9749.40	1053.99	1053.99

Energy plus result

Comparison Table

City	Interior Equipment	Interior Lighting	Cooling	Heating
Shiraz	28%	27%	27%	2%
Dublin	38%	38%	7%	18%
Milan (Case 1)	31%	29%	26%	14%
Milan (Case 2)	27%	26%	23%	23%
Milan (Case 3)	29%	27%	23%	21%

Wall Comparison and U Factor

Base case

Layer	Thickness	Conductivity
1IN Stucco	0.0253	0.6918
8IN Concrete HW	0.2033	1.7296
Wall Insulation	0.0337	0.0432
1/2IN Gypsum	0.0127	0.16

R values

1IN Stucco = 0.0366
8IN Concrete HW = 0.1175
Wall Insulation = 0.78
1/2IN Gypsum = 0.0794

Rtotal = 0.0366 + 0.1175 + 0.78 + 0.0794 = 1.0135

U = 1/Rtotal = 1/1.0135 = 0.9867 w/m2 c

Comparison 1

Layer	Thickness	Conductivity
Wood G05 25mm	0.0254	0.15

R total = 0.169
U = 1/0.169=5.917 W

Comparison 3

Layer	Thickness	Conductivity
Lightweight concrete M11 100mm	0.1016	0.53
1/2IN Gypsum	0.0127	0.16

R total = 0.271
U = 1/0.271=3.69 W/

Thank You