

# Open Studio Project

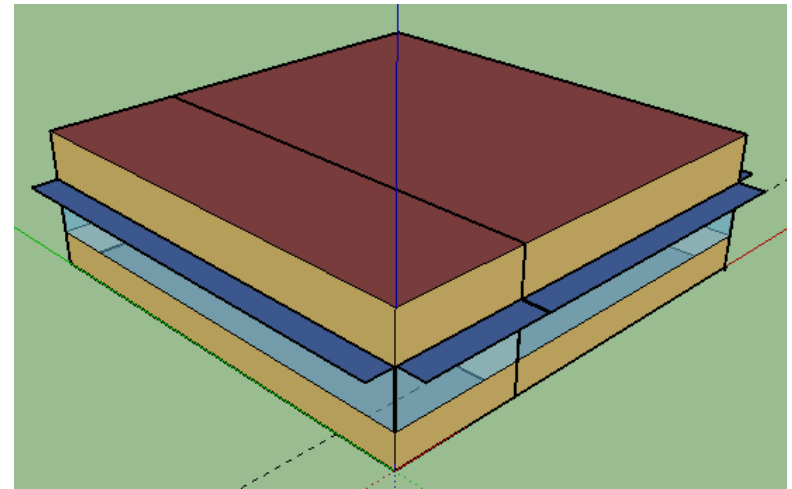
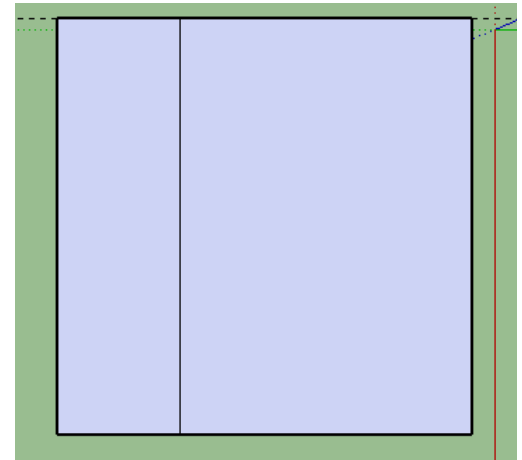


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Moret Giulia  
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# Background

- ❑ Type of building : office for training courses
- ❑ Schedule of courses:  
Monday – Friday 9:00-12:30/14:00-18:00
- ❑ Dimensions: square plan 10x10 m<sup>2</sup> (3x10 breakroom and 7x10 office)





# Construction details

## Internal Wall Layer

- 13mm 1/2IN gypsum
- 19mm gypsum board
- F16 acoustic tile
- 19mm gypsum board
- 13mm 1/2IN gypsum

## Exterior Wall Type 1

- 25mm 1/IN stucco
- M11 100mm lightweight concrete
- F04 Wall air space resistance
- 13mm 1/2IN gypsum

## Exterior Wall Type 2

- 25mm 1/IN stucco
- M11 100mm lightweight concrete
- F04 wall air space resistance
- 34mm wall insulation
- 13mm 1/2IN gypsum

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## Fenestration

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Window Type 1: Clear glass 3mm

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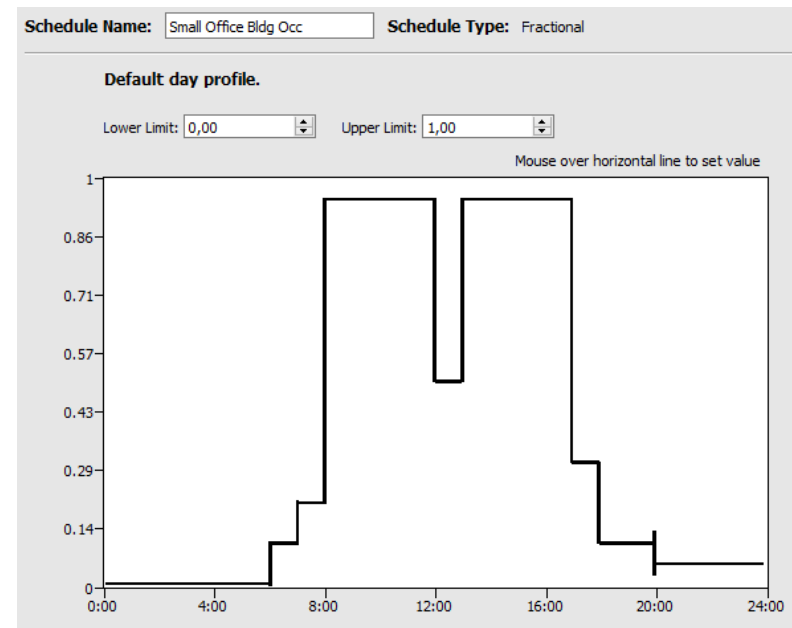
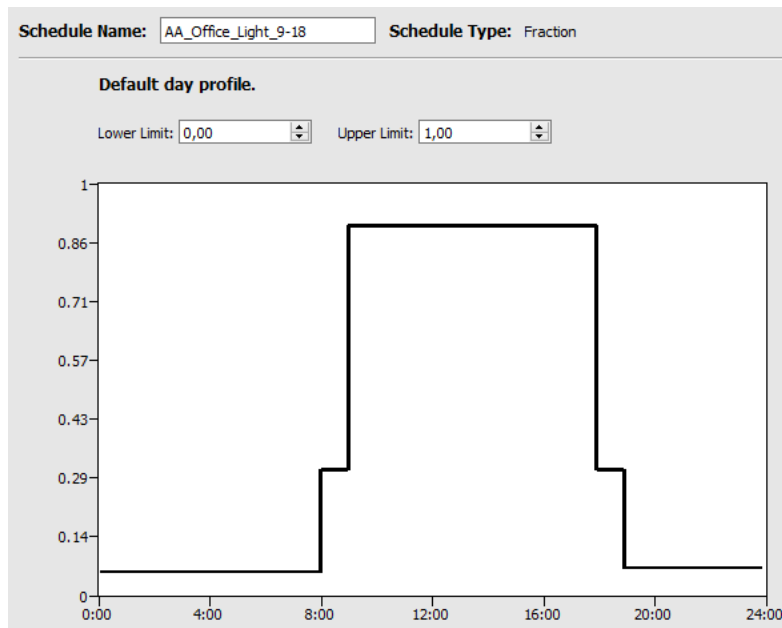
Window Type 2: Theoretical glass 221



# Schedule sets

## Schedule for the open office:

- small office activity: 70 W/person (people stay sit for most of the time)
- small office building equipment: default values
- office work occupancy: default values (it is reasonable to set 0 from 00:00 until 6:00 and maximum in working hours)
- office lights: turn on the lights a little bit before cleaning (30%) and 90% from 9:00 to 18:00, then regulate back to 30% until 20:00





# Schedule sets

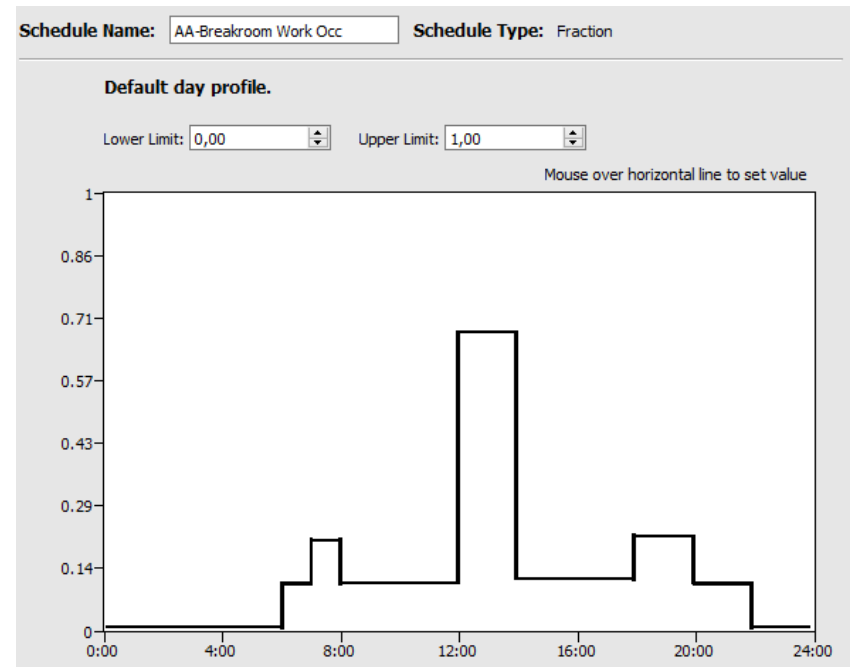
## Schedule for the breakroom:

- small office activity: 70W/person (people stay sit for most of the time)
- small office building equipment: default values
- office work occupancy : assumption of high occupancy at 8:00, during the lunch break and near the closing time of the office
- office lights: same as open office room

## Space type: conference room

## People definition:

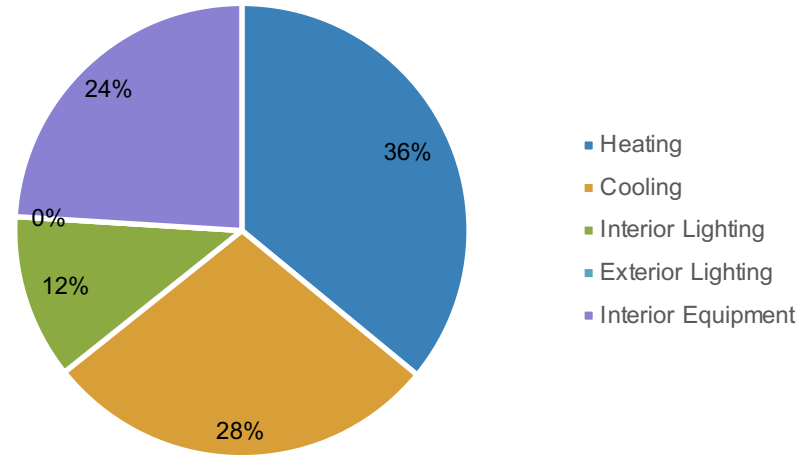
- Breakroom: default value
- Open office: conference





# Simulation 1

- Milan
- Exterior Wall Type 1
- Window Type 1



Annual overview:

End Use	Consumption (kWh)
Heating	11666,67
Cooling	9172,22
Interior Lighting	3795,3
Exterior Lighting	0
Interior Equipment	7782,73



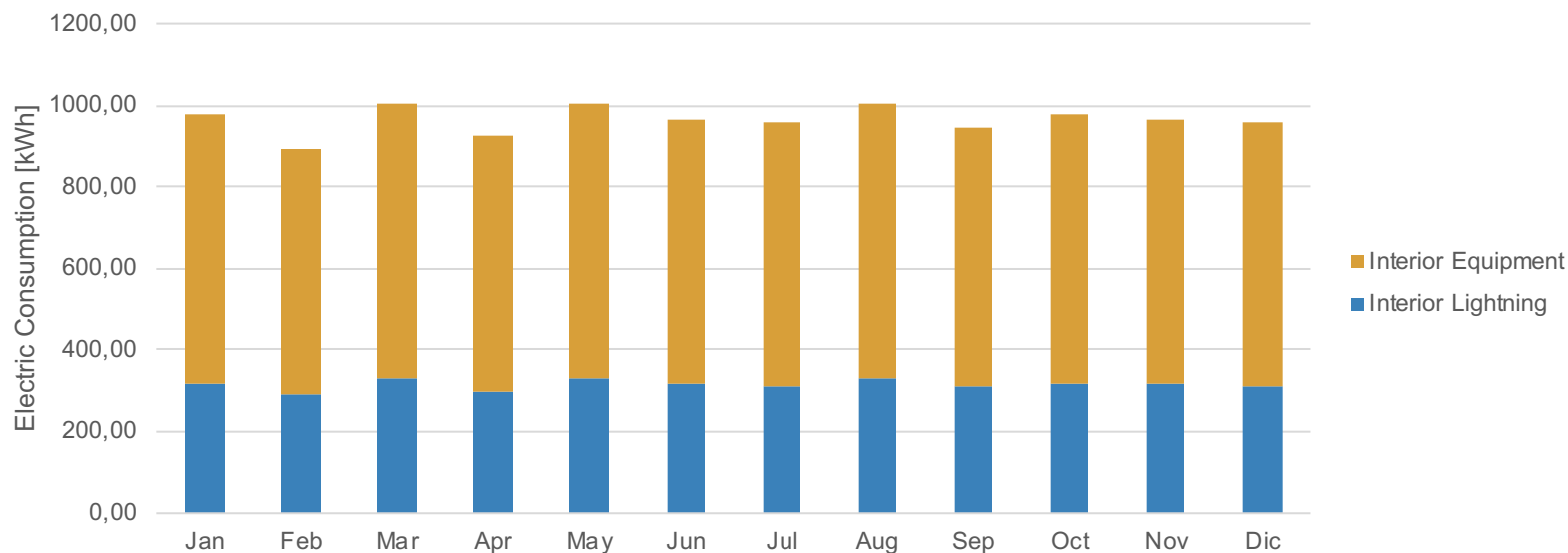
# Simulation 1

	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]
Total Site Energy	116.65	1166.52
Net Site Energy	116.65	1166.52
Total Source Energy	318.43	3184.35
Net Source Energy	318.43	3184.35

## Monthly overview: electricity consumption

Interior Lightining total energy: 3795,3 kWh

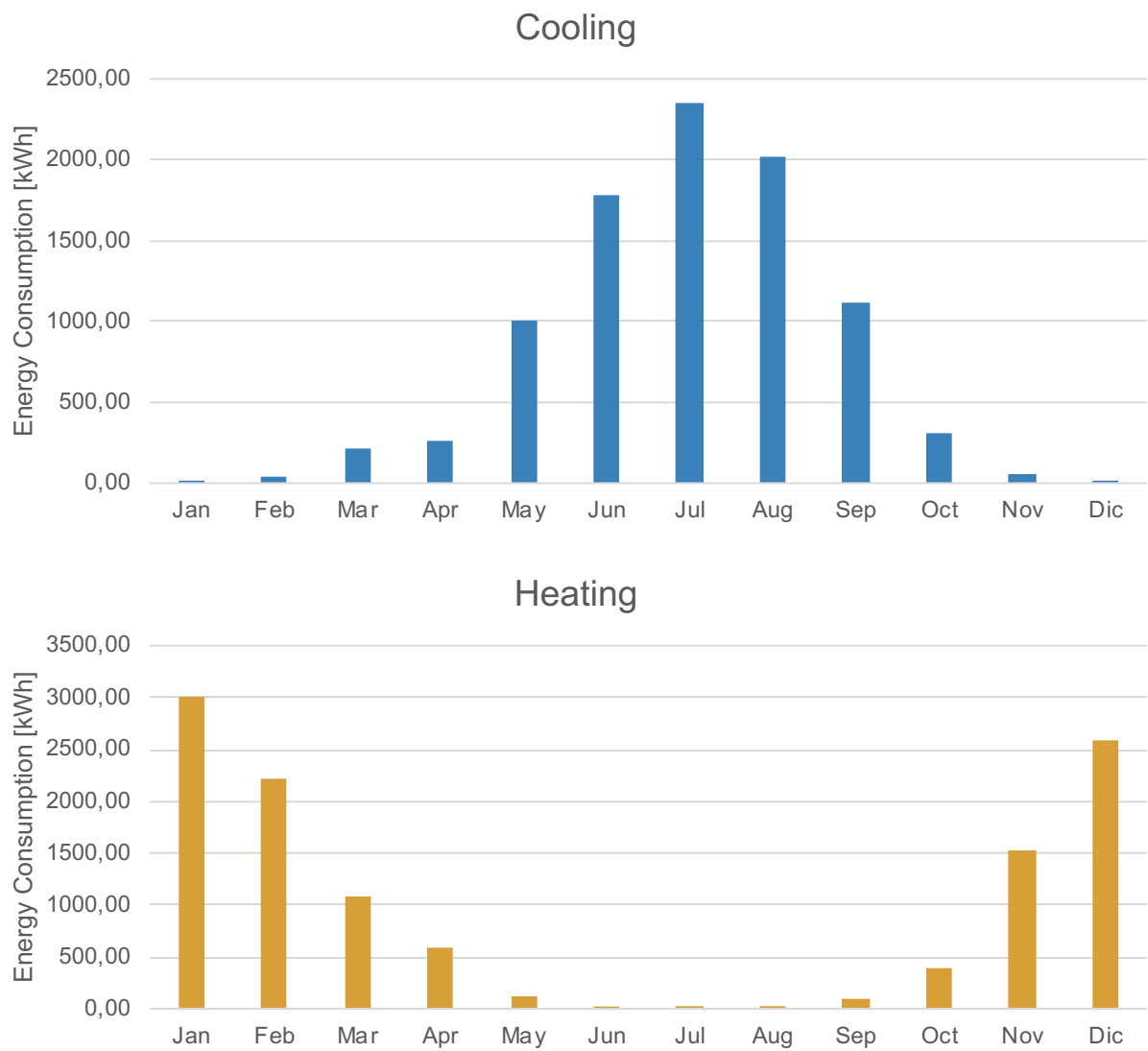
Interior Equipment total energy: 7782,73 kWh





# Simulation 1

## District cooling and heating consumption





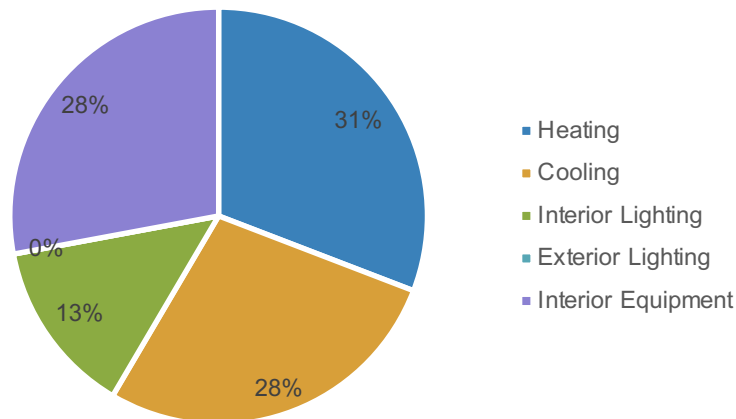


# Simulation 2

- Milan
- Exterior Wall Type 1
- Window Type 2

Annual overview:

End Use	Consumption (kWh)
Heating	8597,22
Cooling	7700
Interior Lighting	3795,3
Exterior Lighting	0
Interior Equipment	7782,73



	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]
Total Site Energy	100.32	1003.18
Net Site Energy	100.32	1003.18
Total Source Energy	272.97	2729.67
Net Source Energy	272.97	2729.67

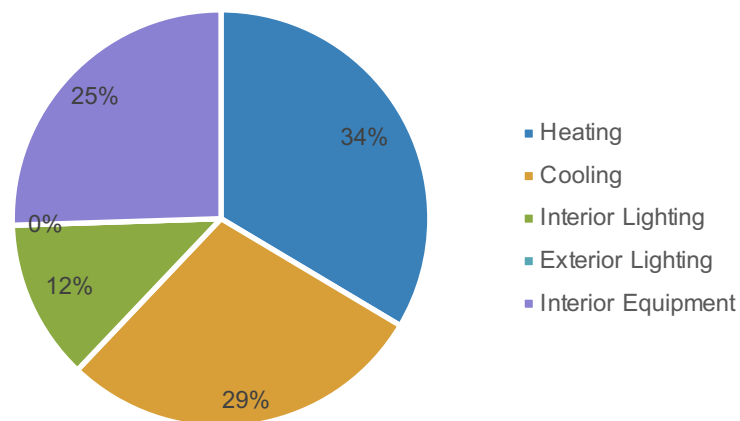


# Simulation 3

- Milan
- Exterior Wall Type 2
- Window Type 1

Annual overview:

End Use	Consumption (kWh)
Heating	10250
Cooling	8700
Interior Lighting	3795,3
Exterior Lighting	0
Interior Equipment	7782,73



	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]
Total Site Energy	109.87	1098.66
Net Site Energy	109.87	1098.66
Total Source Energy	298.27	2982.65
Net Source Energy	298.27	2982.65

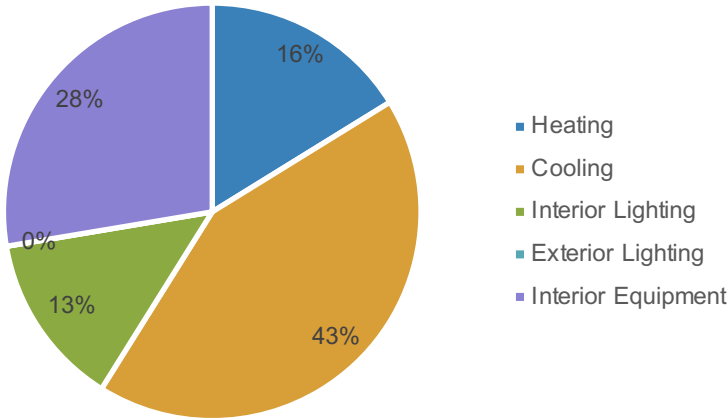


# Simulation 4

- Rome
- Exterior Wall Type 1
- Window Type 1

Annual overview:

End Use	Consumption (kWh)
Heating	4563,89
Cooling	12030,56
Interior Lighting	3795,3
Exterior Lighting	0
Interior Equipment	7782,73



	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]
Total Site Energy	101.38	1013.78
Net Site Energy	101.38	1013.78
Total Source Energy	237.01	2370.13
Net Source Energy	237.01	2370.13

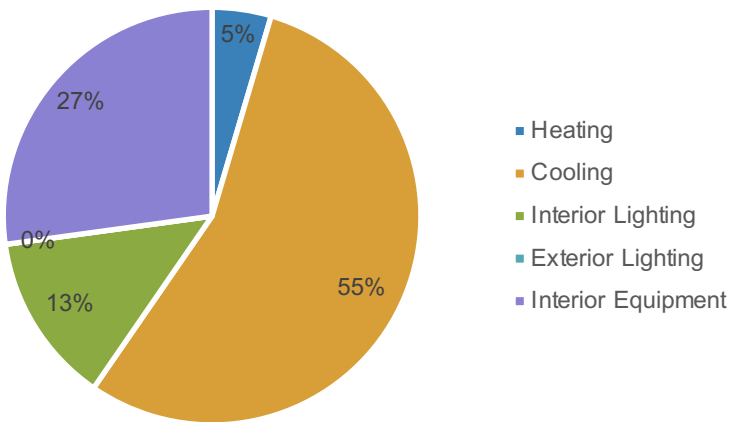


# Simulation 5

- Palermo
- Exterior Wall Type 1
- Window Type 1

Annual overview:

End Use	Consumption (kWh)
Heating	1313,89
Cooling	15769,44
Interior Lighting	3795,3
Exterior Lighting	0
Interior Equipment	7782,73



	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]
Total Site Energy	103.16	1031.61
Net Site Energy	103.16	1031.61
Total Source Energy	209.01	2090.06
Net Source Energy	209.01	2090.06

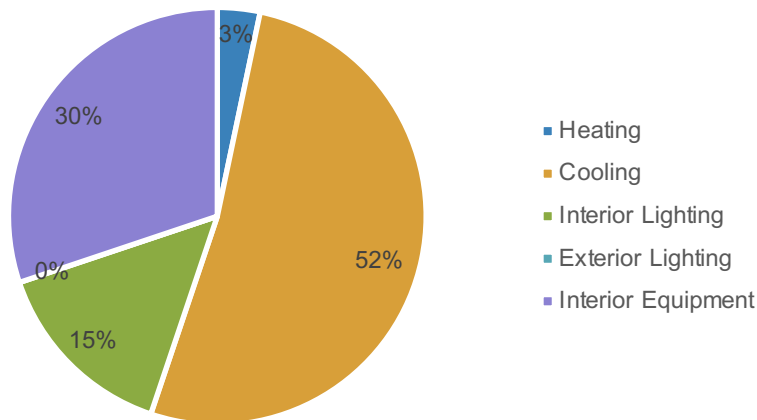


# Simulation 6

- Palermo
- Exterior Wall Type 1
- Window Type 2

Annual overview:

End Use	Consumption (kWh)
Heating	852,78
Cooling	13391,67
Interior Lighting	3795,3
Exterior Lighting	0
Interior Equipment	7782,73





# Simulation 7

- Palermo
- Exterior Wall Type 2
- Window Type 1

Annual overview:

End Use	Consumption (kWh)
Heating	1141,67
Cooling	14891,67
Interior Lighting	3795,3
Exterior Lighting	0
Interior Equipment	7782,73

