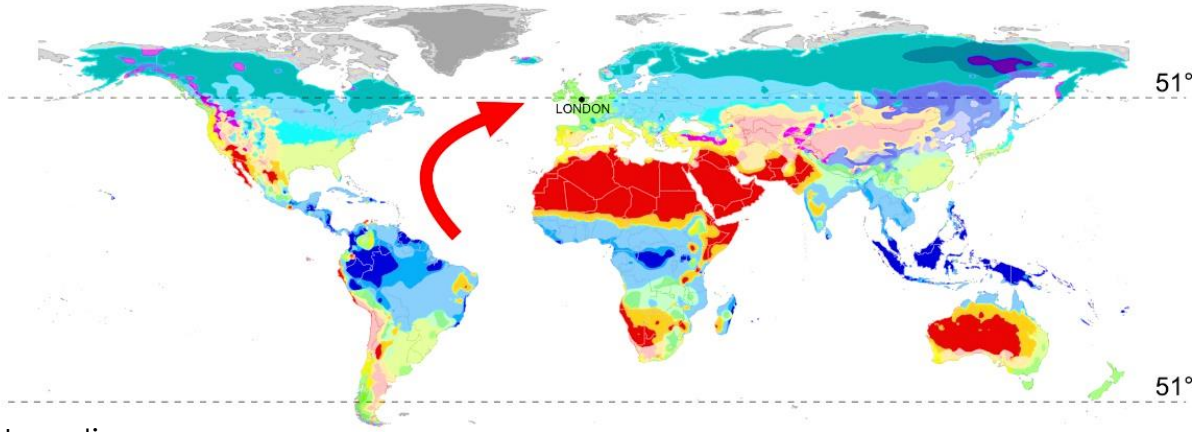
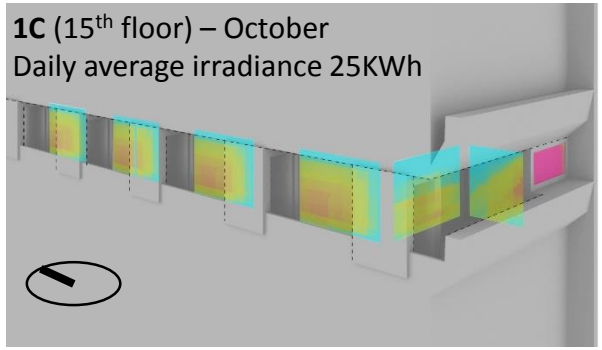
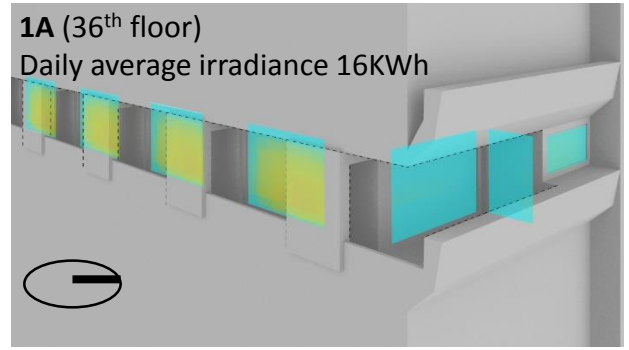
Barbican *the lesson learned*

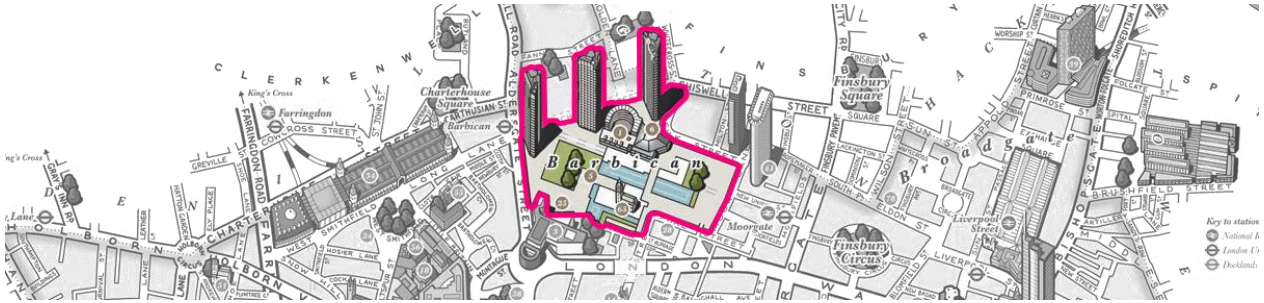


Location

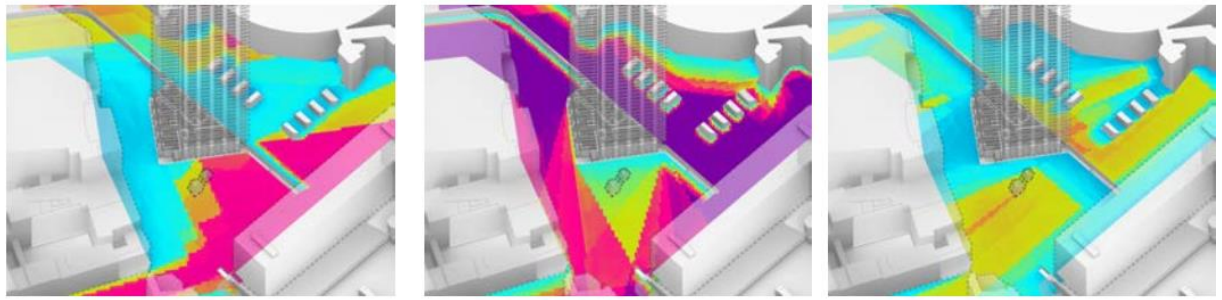




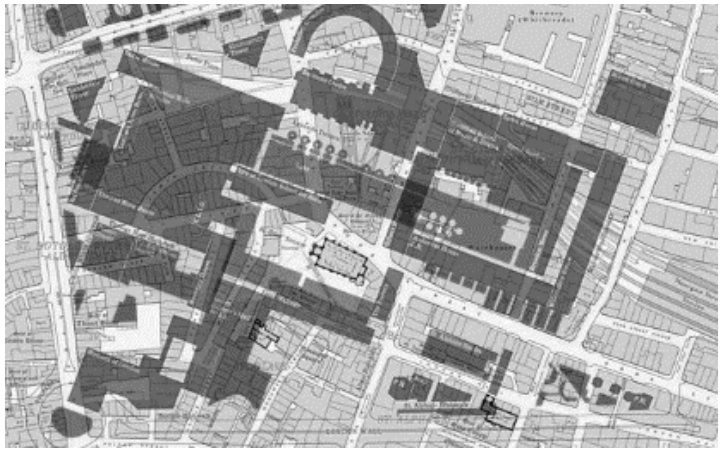
Design Concepts



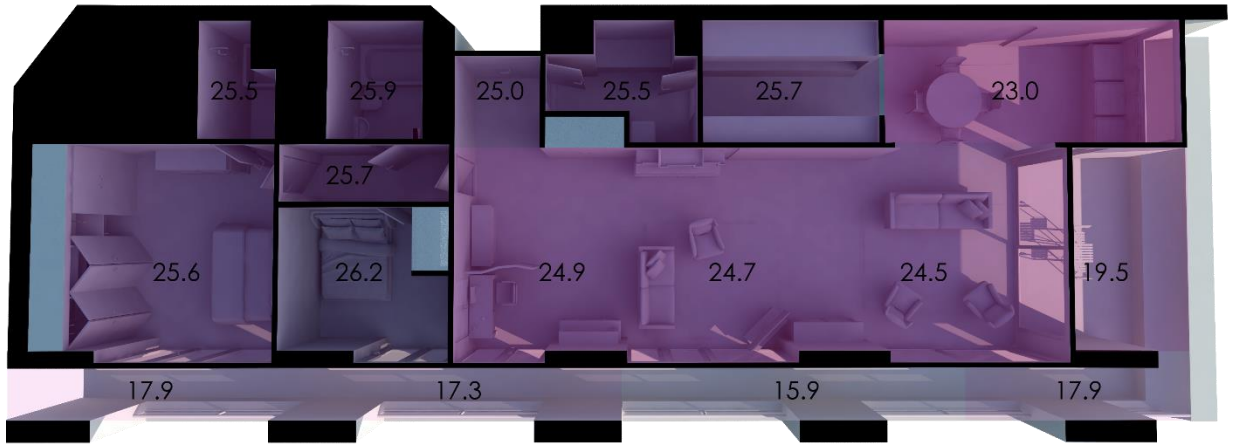
Barbican Centre



Outdoor Thermal Comfort



History



Spot measurements

Lake Terrace

LAKE

Sunday november 2016

11:00am — 5:00pm

Max temperature 9°C | Max Humidity 93% | Wind 2.2 m/s

50%

30%

20%

Max temp
14.5°C

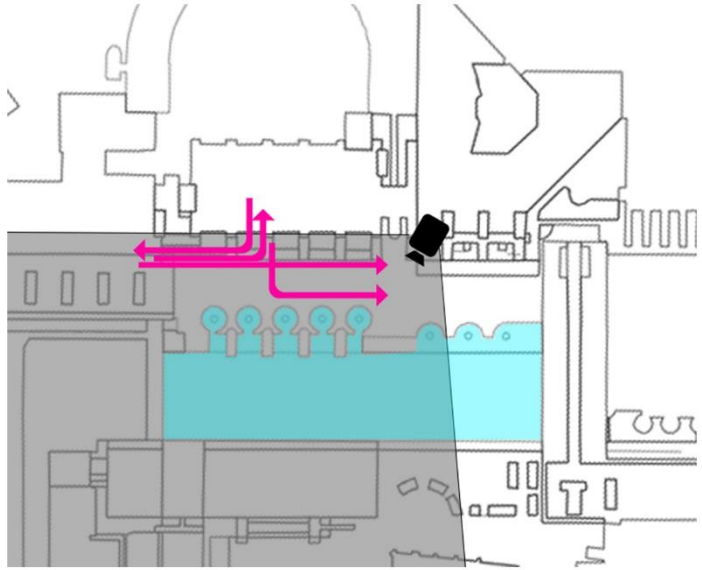
Max Humidity
30%

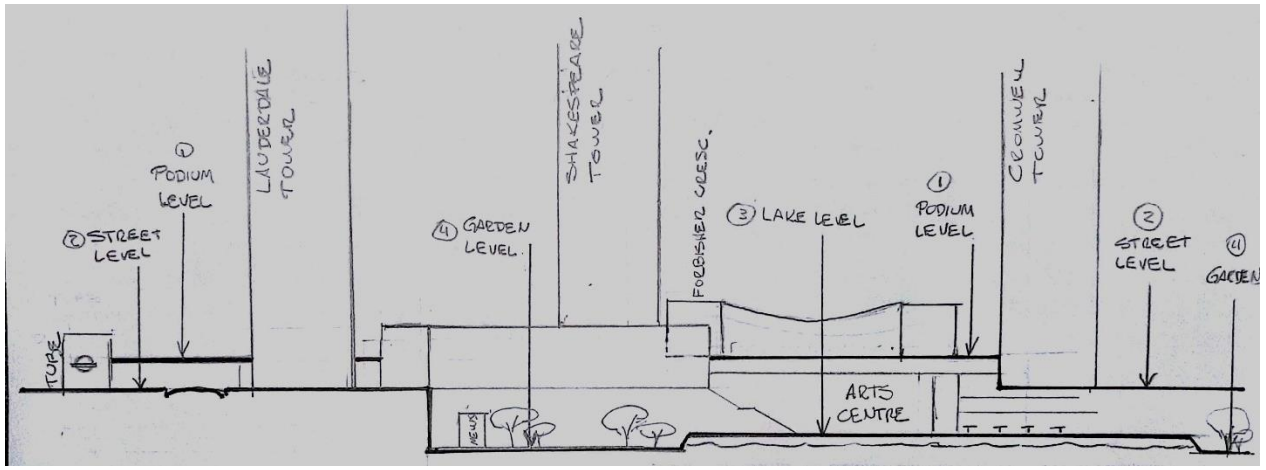
Wind
0.5 m/s

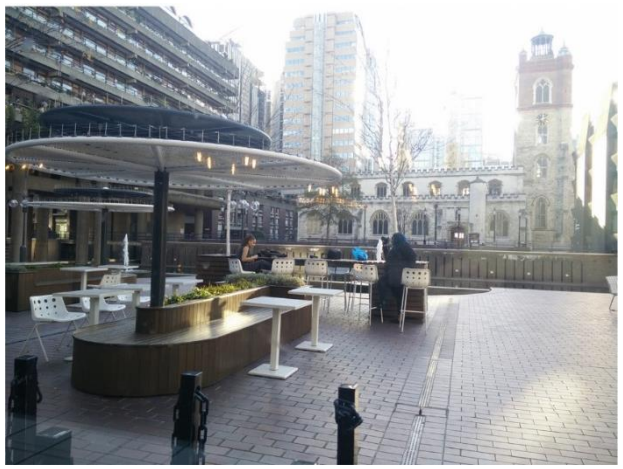
Peak hour:
lunch time
12:30pm

50 people at cafeteria

7 people outside







Tuesday november 2016

11:00am — 5:00pm

Max temperature 7°C | Max Humidity 87% | Wind 1.4 m/s

70%

20%

10%

Max temp
14.5°C

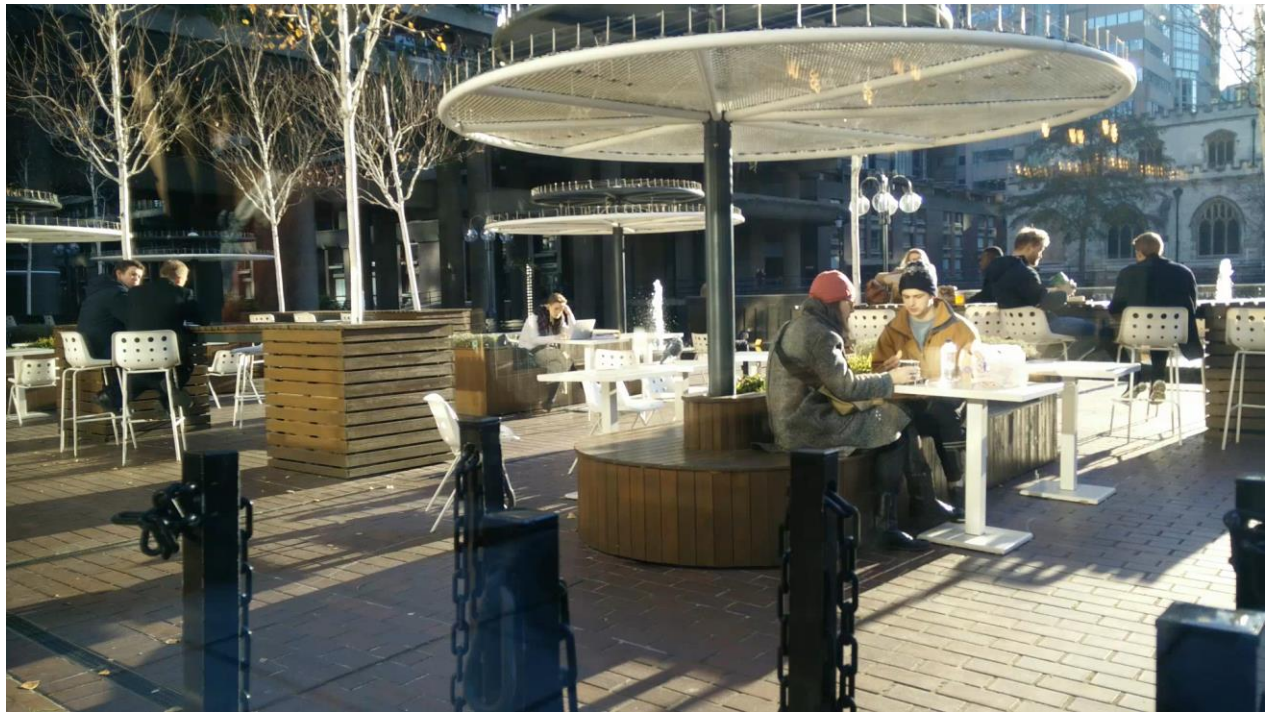
Max Humidity
30%

Peak hour:
lunch time
11:30pm

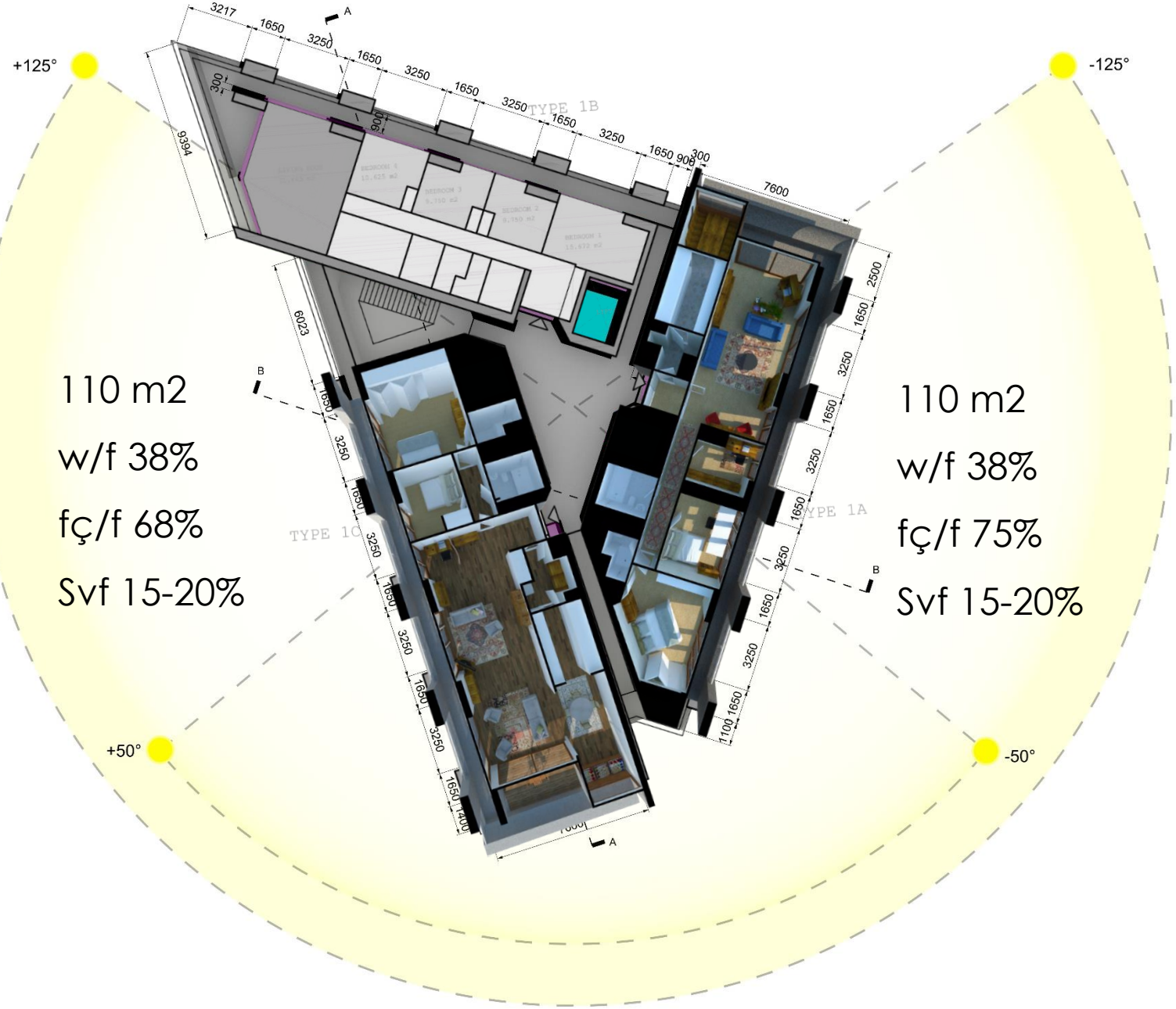
Wind
0.5 m/s

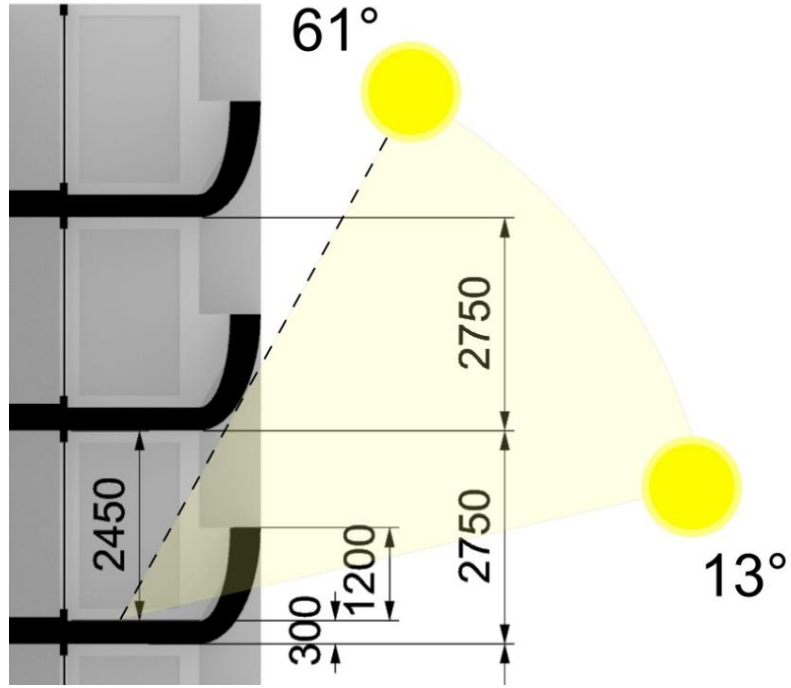
50 people at cafeteria

2 people outside

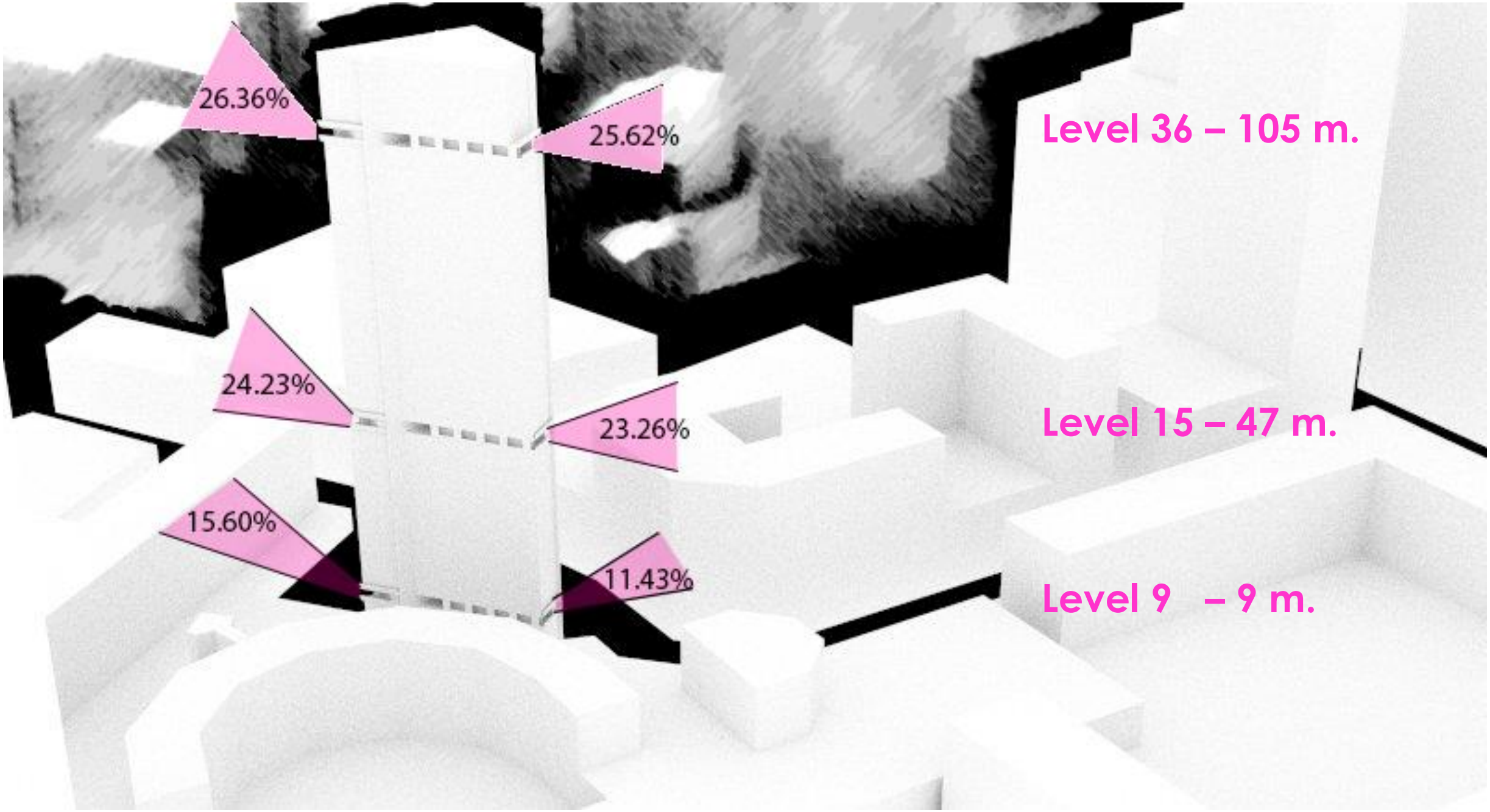


Cromwell Tower

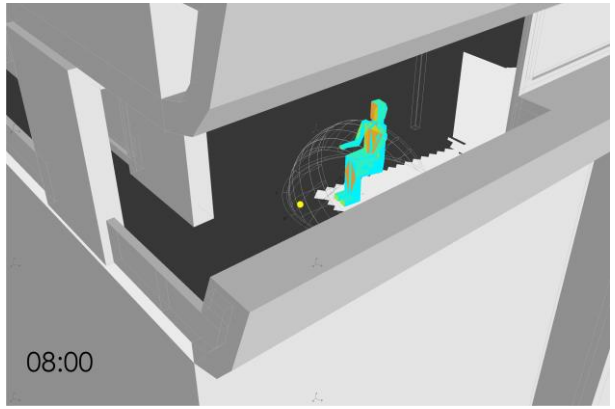


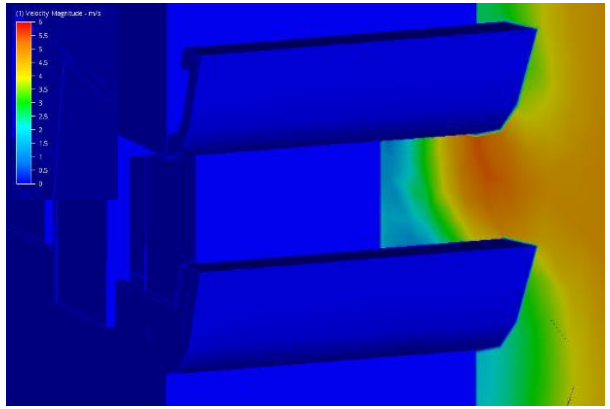


80 m2
w/f 18%
fç/f 27%
Svf 30%


26.36%
25.62%
Level 36 – 105 m.
24.23%
23.26%
Level 15 – 47 m.
15.60%
11.43%
Level 9 – 9 m.

NORTH top

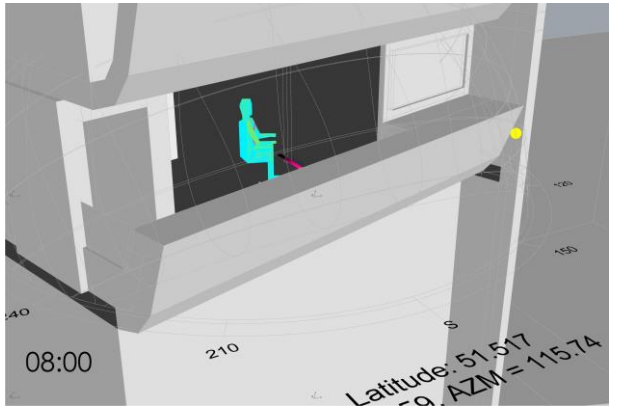




2 h. sun exposure

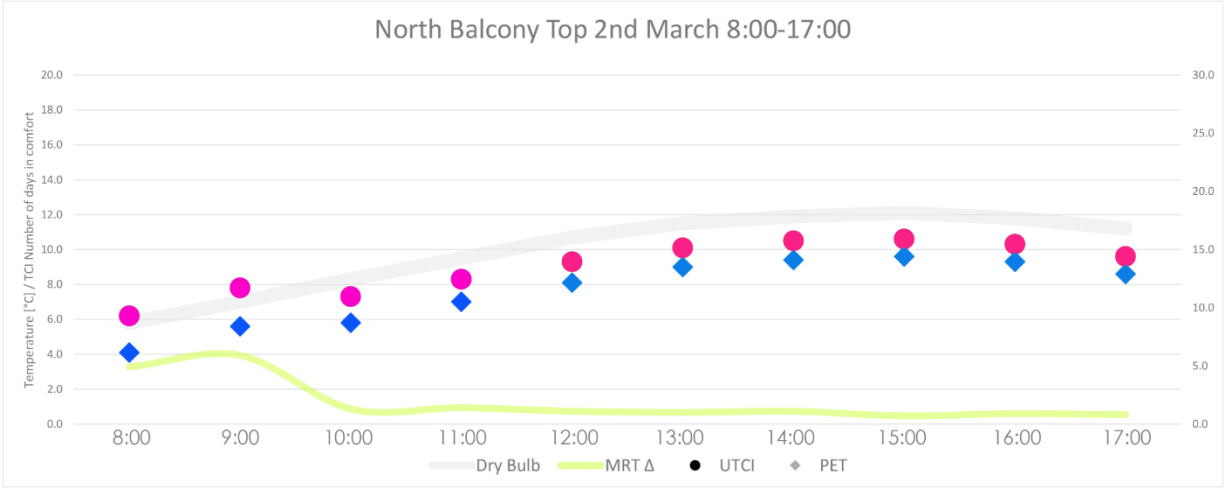
< 3 m/s

SOUTH top

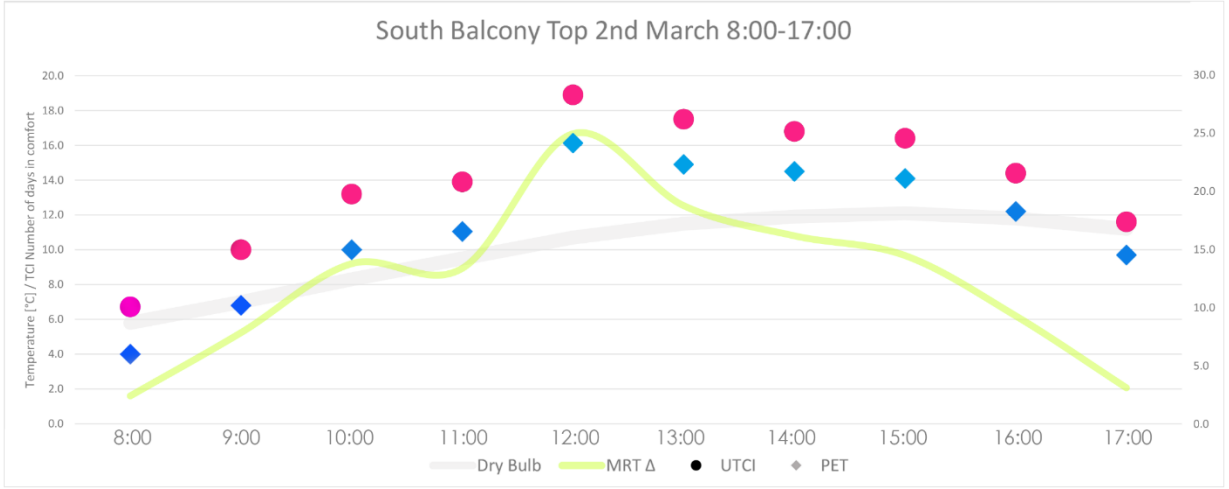


6 h. sun exposure

< 1 m/s

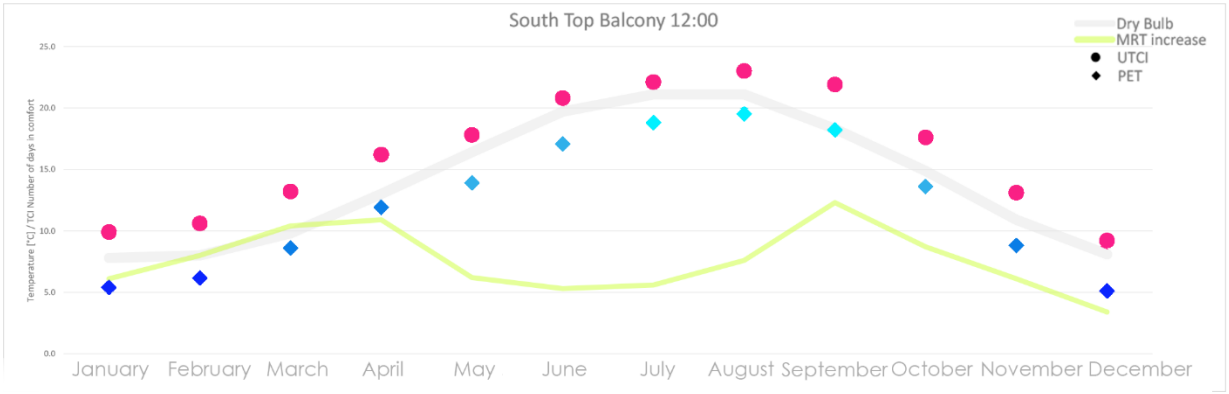


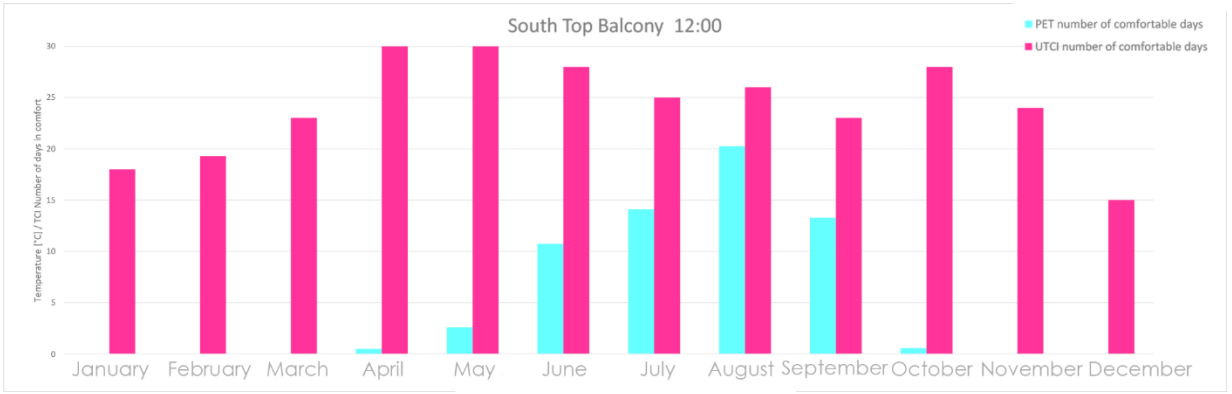
main factor: dry bulb



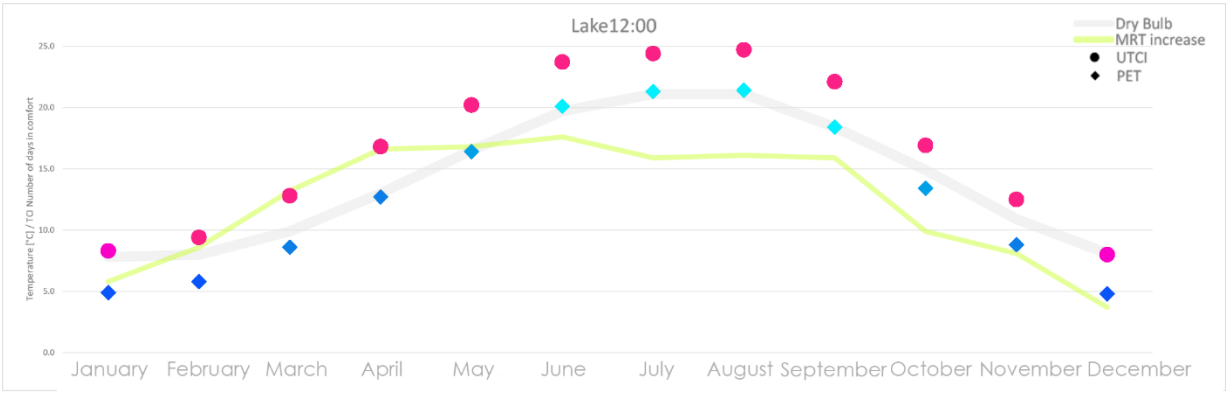
main factor: solar radiation

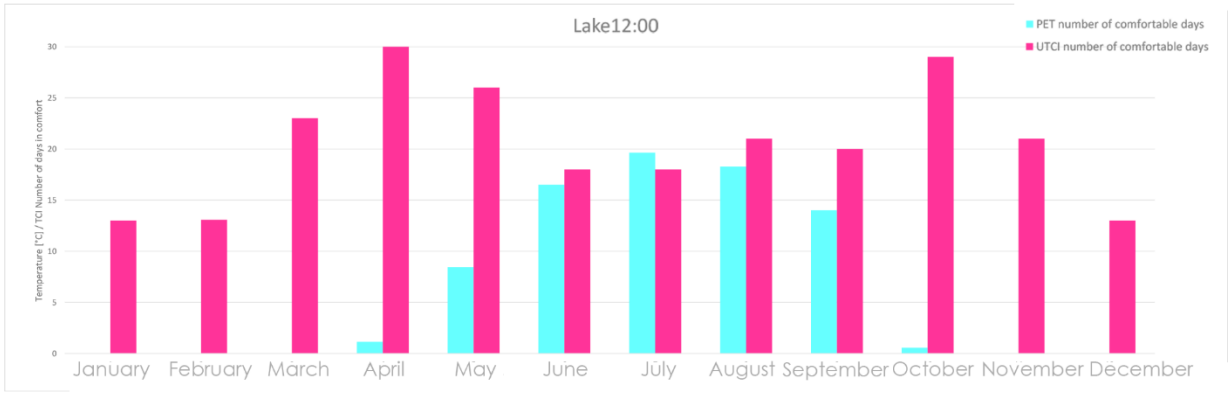
TOP SOUTH BALCONY



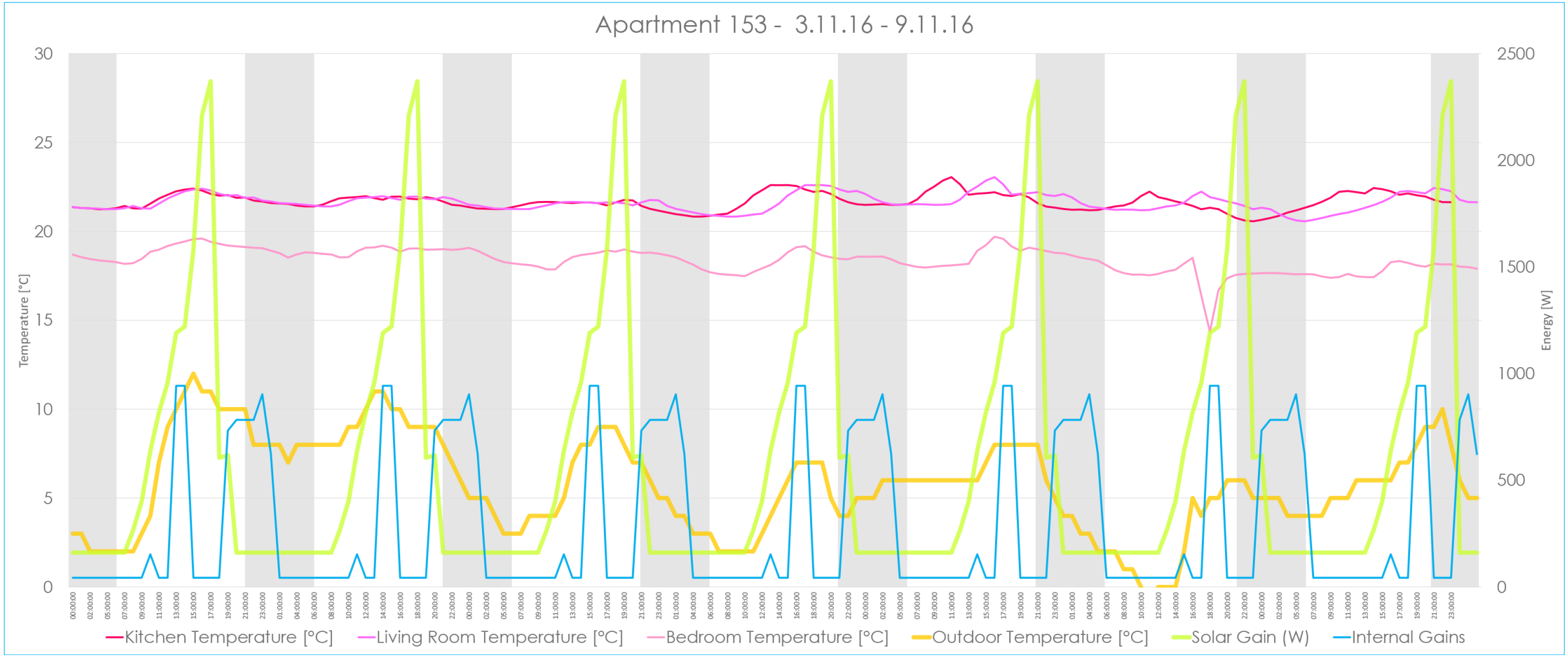


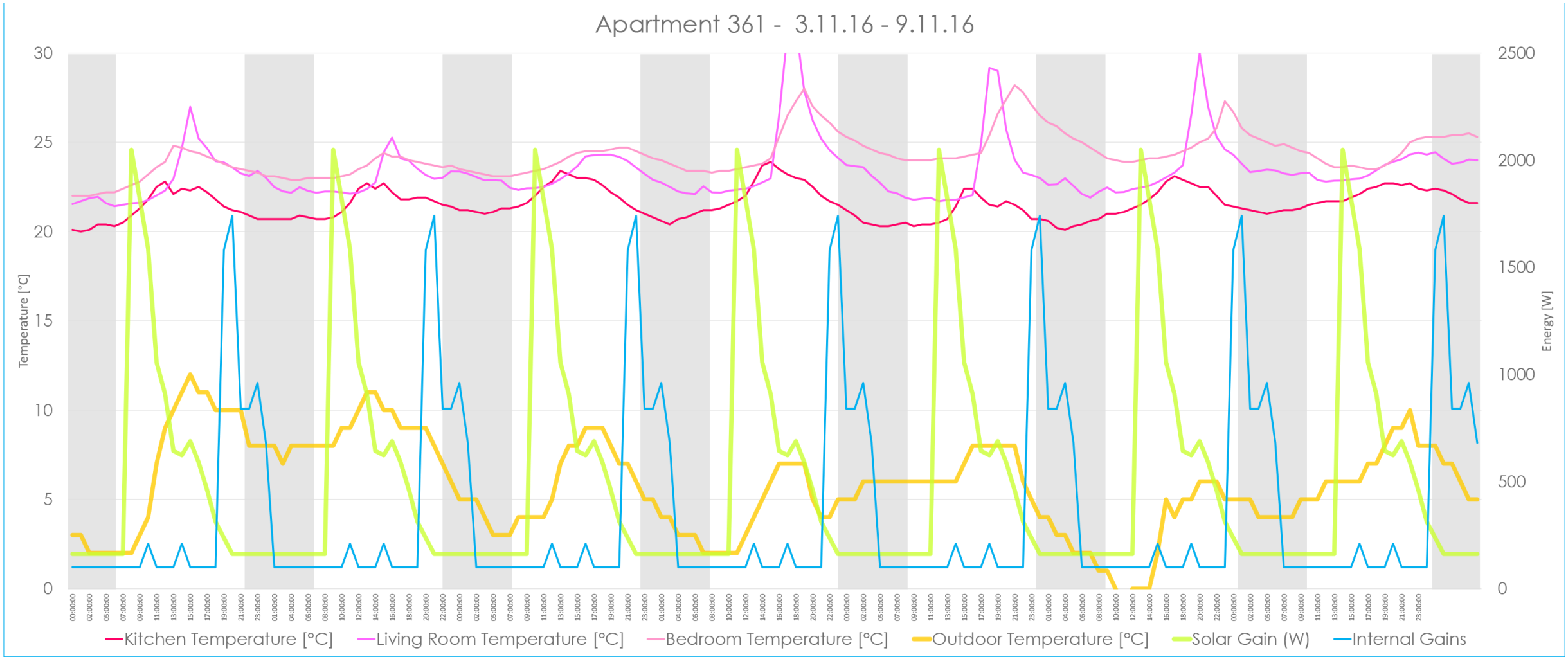
LAKE TERRACE



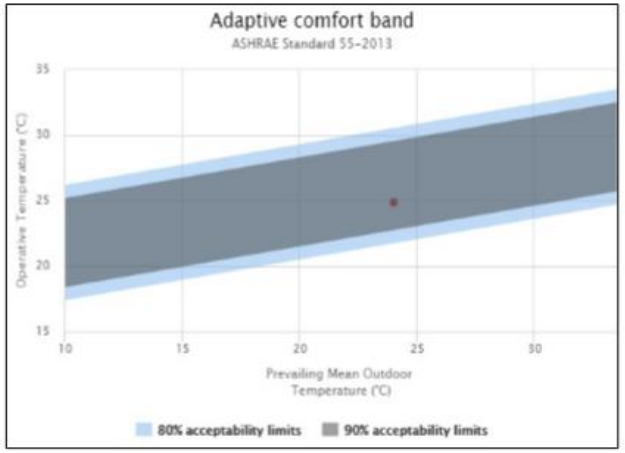


Case Studies

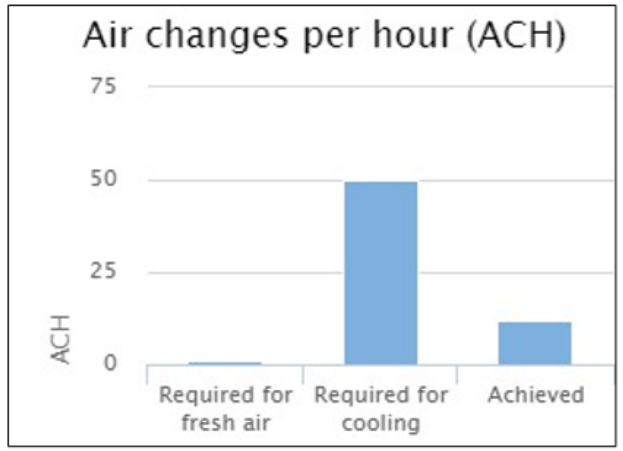

Apartment 153 - 3.11.16 - 9.11.16
Temperature [°C]
Energy [W]
30
25
20
15
10
5
0
2500
2000
1500
1000
500
0
Kitchen Temperature [°C]
Living Room Temperature [°C]
Bedroom Temperature [°C]
Outdoor Temperature [°C]
Solar Gain (W)
Internal Gains


Apartment 361 - 3.11.16 - 9.11.16
Temperature [°C]
Energy [W]
30
25
20
15
10
5
0
2500
2000
1500
1000
500
0
Kitchen Temperature [°C]
Living Room Temperature [°C]
Bedroom Temperature [°C]
Outdoor Temperature [°C]
Solar Gain (W)
Internal Gains

FLAT TYPE 1 EAST

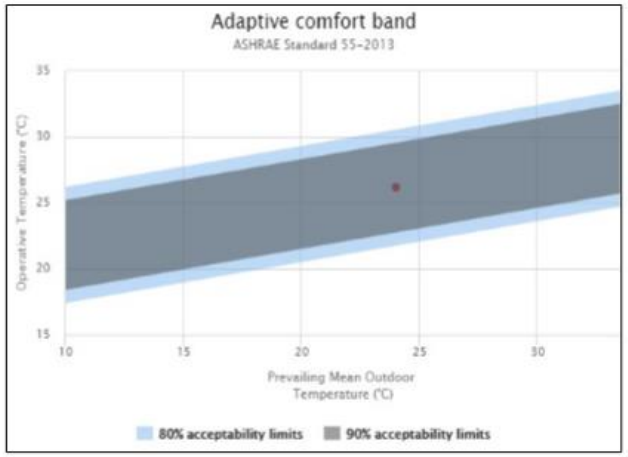


All windows open 50% free area



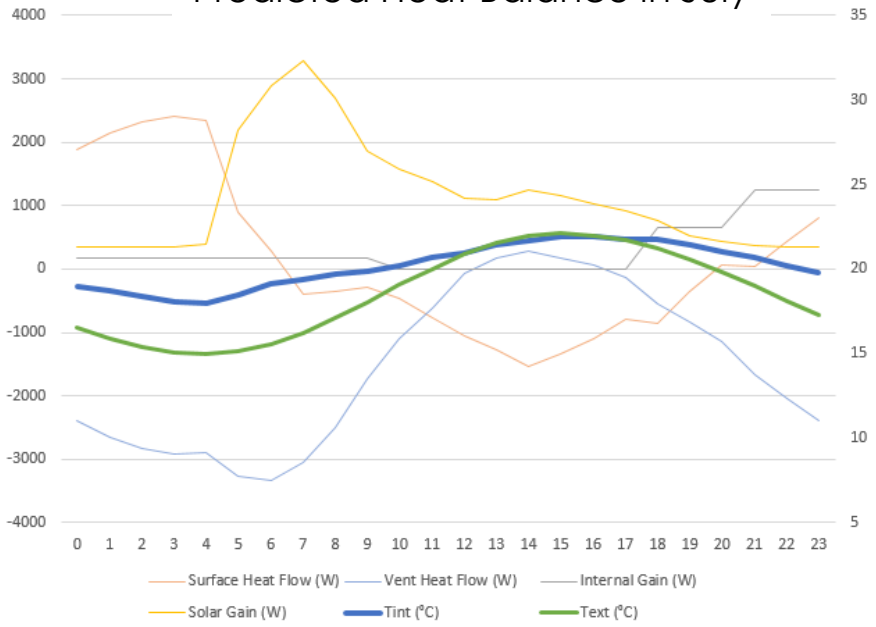
>10 ACH achieved in both

FLAT TYPE 3 WEST

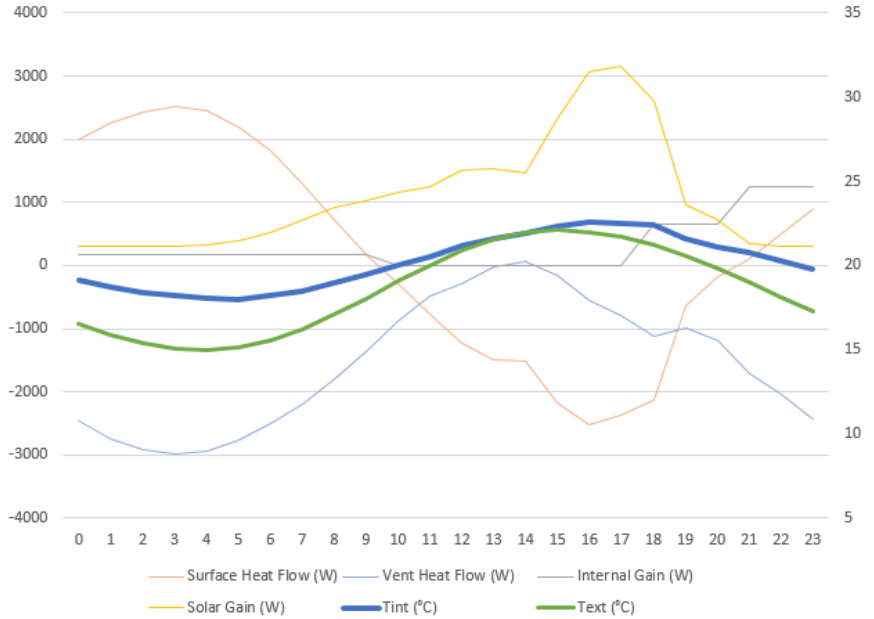


All windows open 50% free area

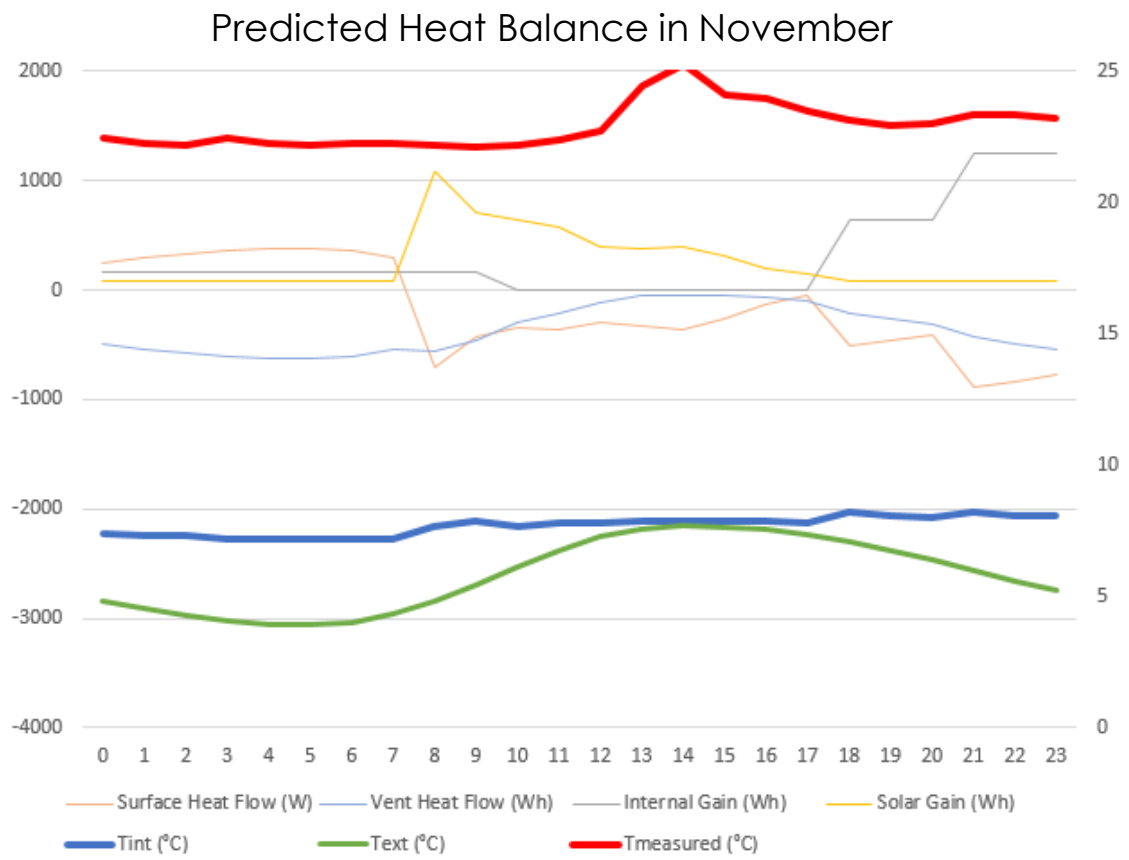
Predicted Heat Balance in July



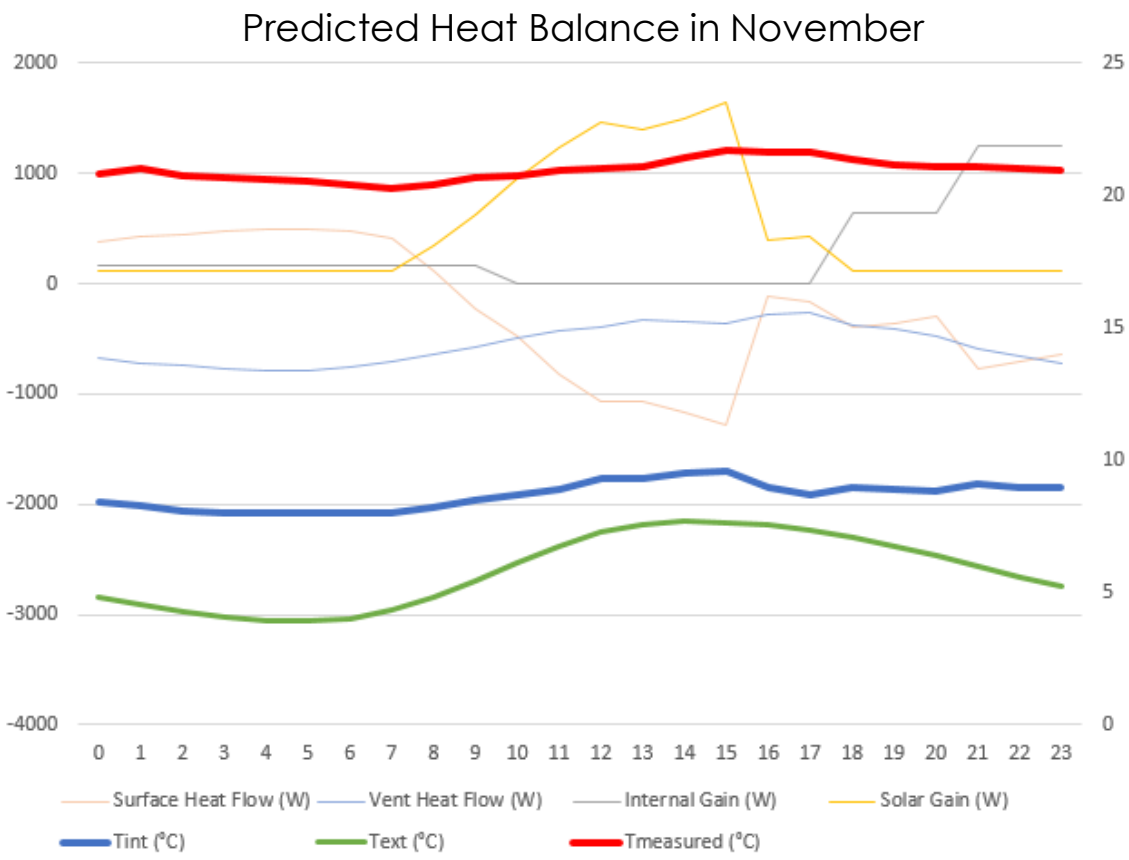
Predicted Heat Balance in July



FLAT TYPE 1 EAST

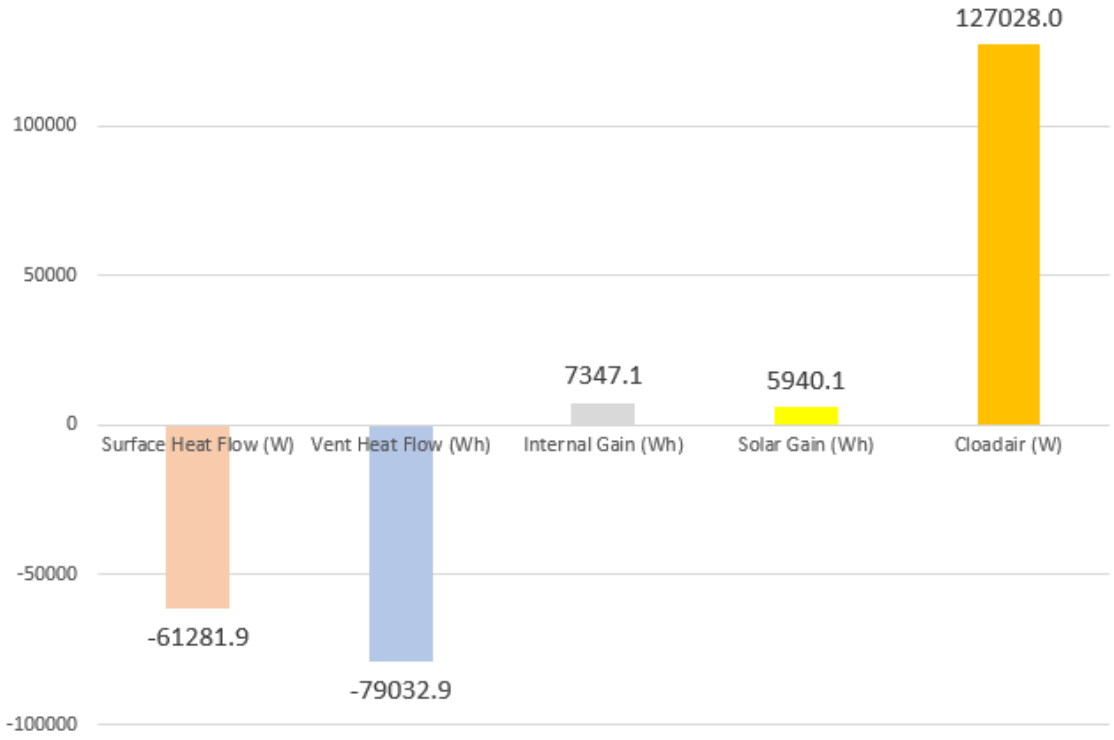


FLAT TYPE 3 WEST



FLAT TYPE 1 EAST

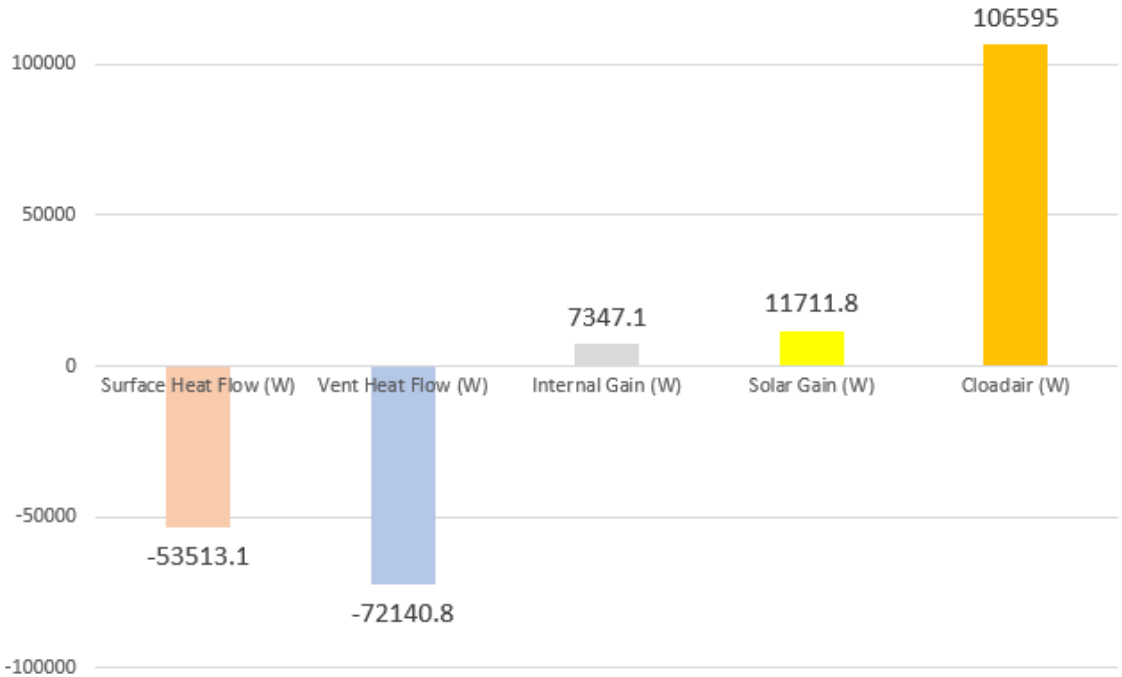
Predicted Heat Gains & Losses in November



Internal temperature set to 23°C

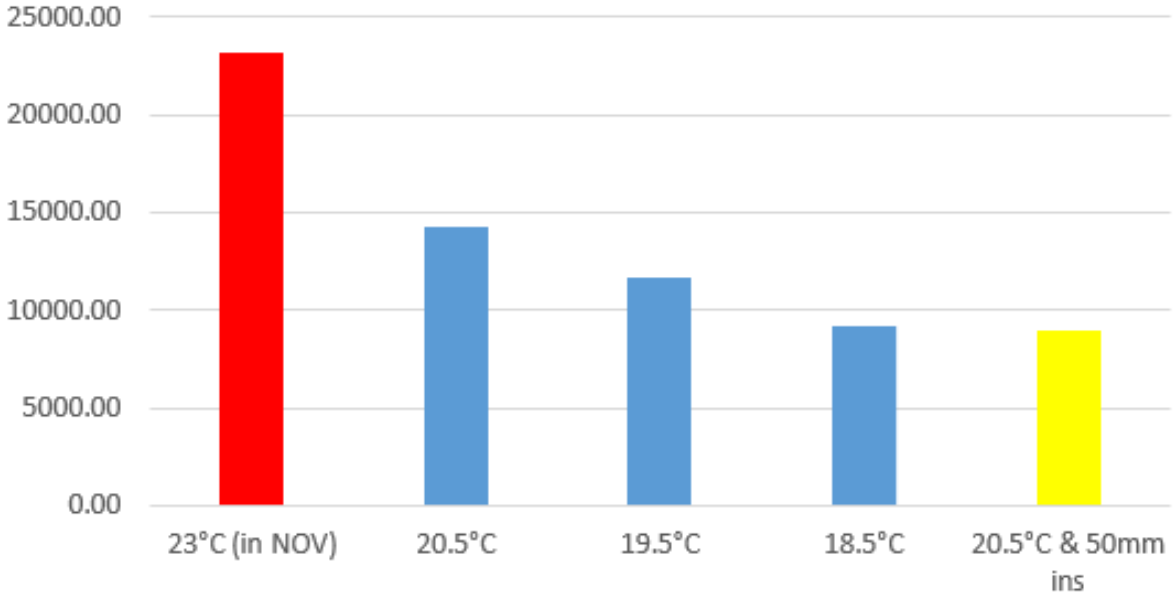
FLAT TYPE 3 WEST

Predicted Heat Gains & Losses in November

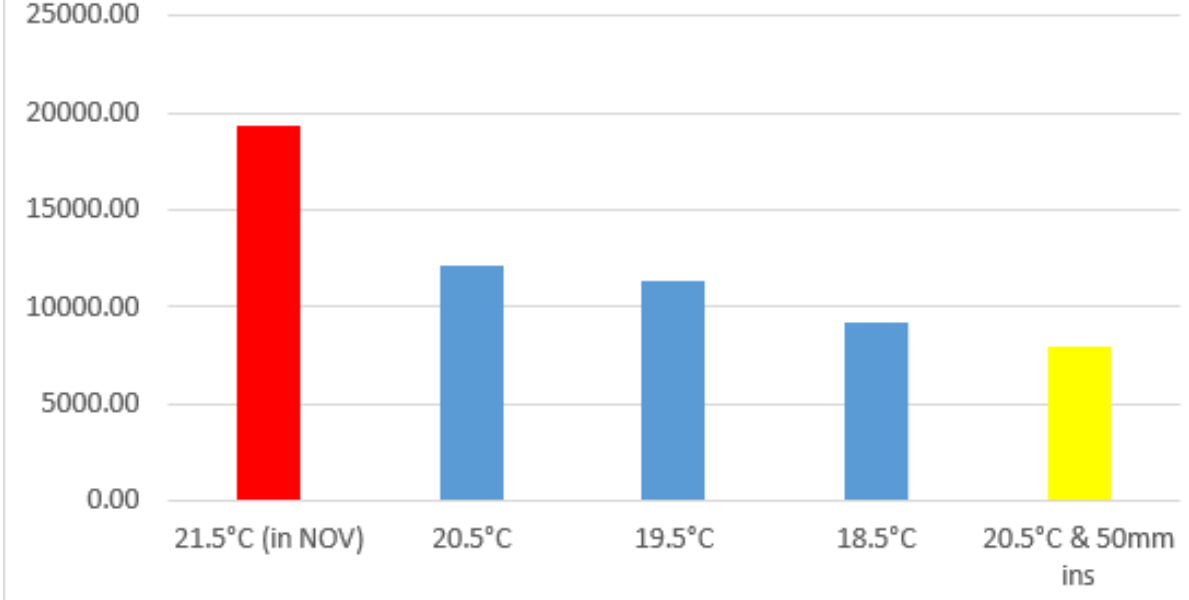


Internal temperature set to 21.5°C

FLAT TYPE 1 EAST



FLAT TYPE 3 WEST



Final Conclusions