

## Assignment 10. Energy balance

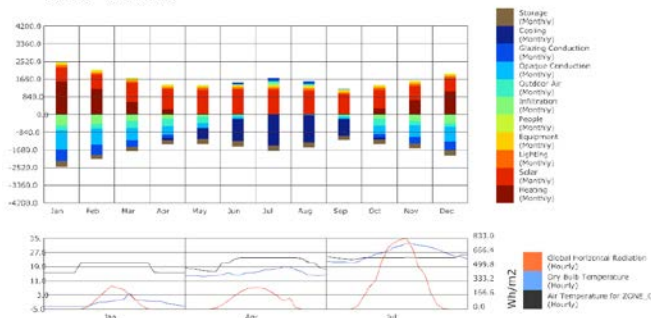
# Building Optimization Study

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## Procedure

### ARCH633 Environmental Systems I

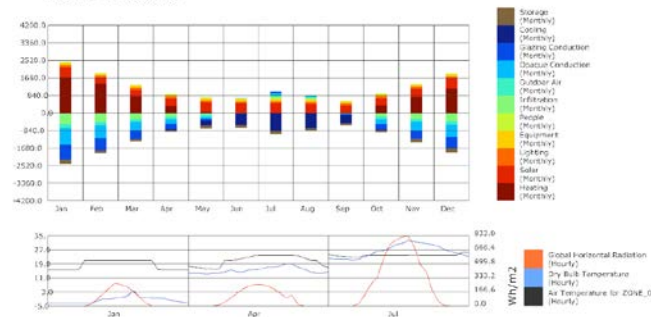
Cooling Load: 179.96 kWh/m<sup>2</sup>  
Heating Load: 193.03 kWh/m<sup>2</sup>  
Total Load: 371.95 kWh/m<sup>2</sup>



Window to Wall Ratio: N.9, W.3, S.2, E.6, No Blind

### ARCH633 Environmental Systems I

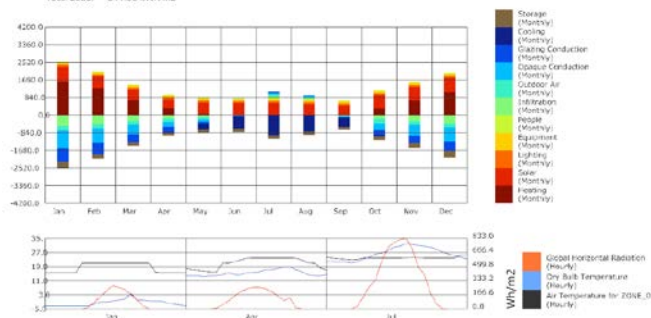
Cooling Load: 93.89 kWh/m<sup>2</sup>  
Heating Load: 223.14 kWh/m<sup>2</sup>  
Total Load: 317.03 kWh/m<sup>2</sup>



Window to Wall Ratio: N.9, W.3, S.2, E.6, .7 long 4 Blinds

### ARCH633 Environmental Systems I

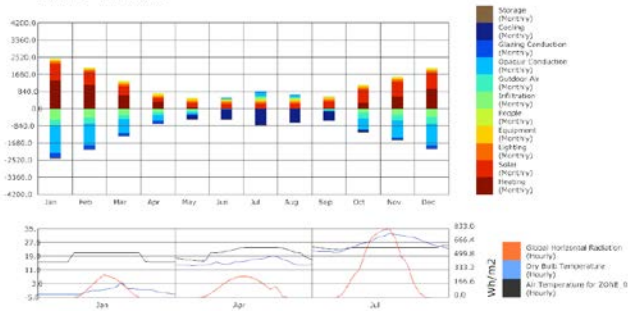
Cooling Load: 106.20 kWh/m<sup>2</sup>  
Heating Load: 205.16 kWh/m<sup>2</sup>  
Total Load: 311.36 kWh/m<sup>2</sup>



Window to Wall Ratio: N.9, W.3, S.2, E.6, .4 long 4 Blinds

### ARCH633 Environmental Systems I

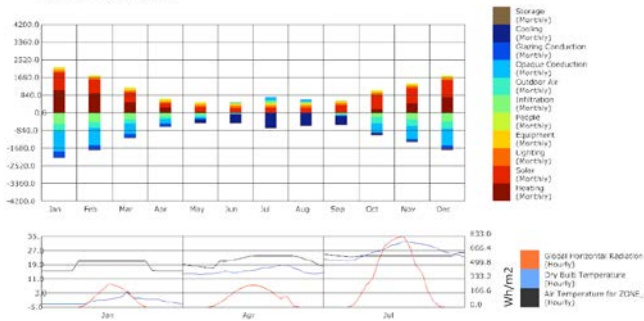
Cooling Load: 82.73 kWh/m<sup>2</sup>  
Heating Load: 185.65 kWh/m<sup>2</sup>  
Total Load: 278.38 kWh/m<sup>2</sup>



Window to Wall Ratio: N0, W0, S.7, E0, .4 long 4 Blinds

### ARCH633 Environmental Systems I

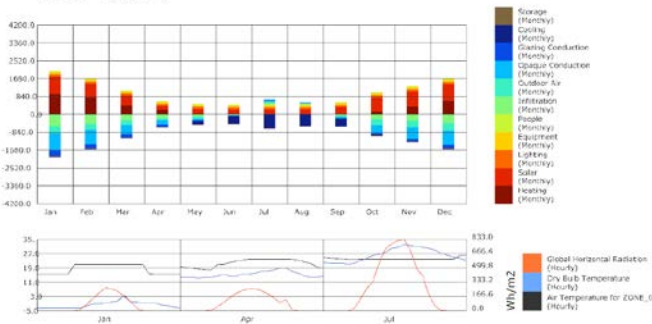
Cooling Load: 82.37 kWh/m<sup>2</sup>  
Heating Load: 142.19 kWh/m<sup>2</sup>  
Total Load: 224.57 kWh/m<sup>2</sup>



Window to Wall Ratio: N0, W0, S.7, E0, .4 long 4 Blinds, R14.8 Wall, R.7 Window

### ARCH633 Environmental Systems I

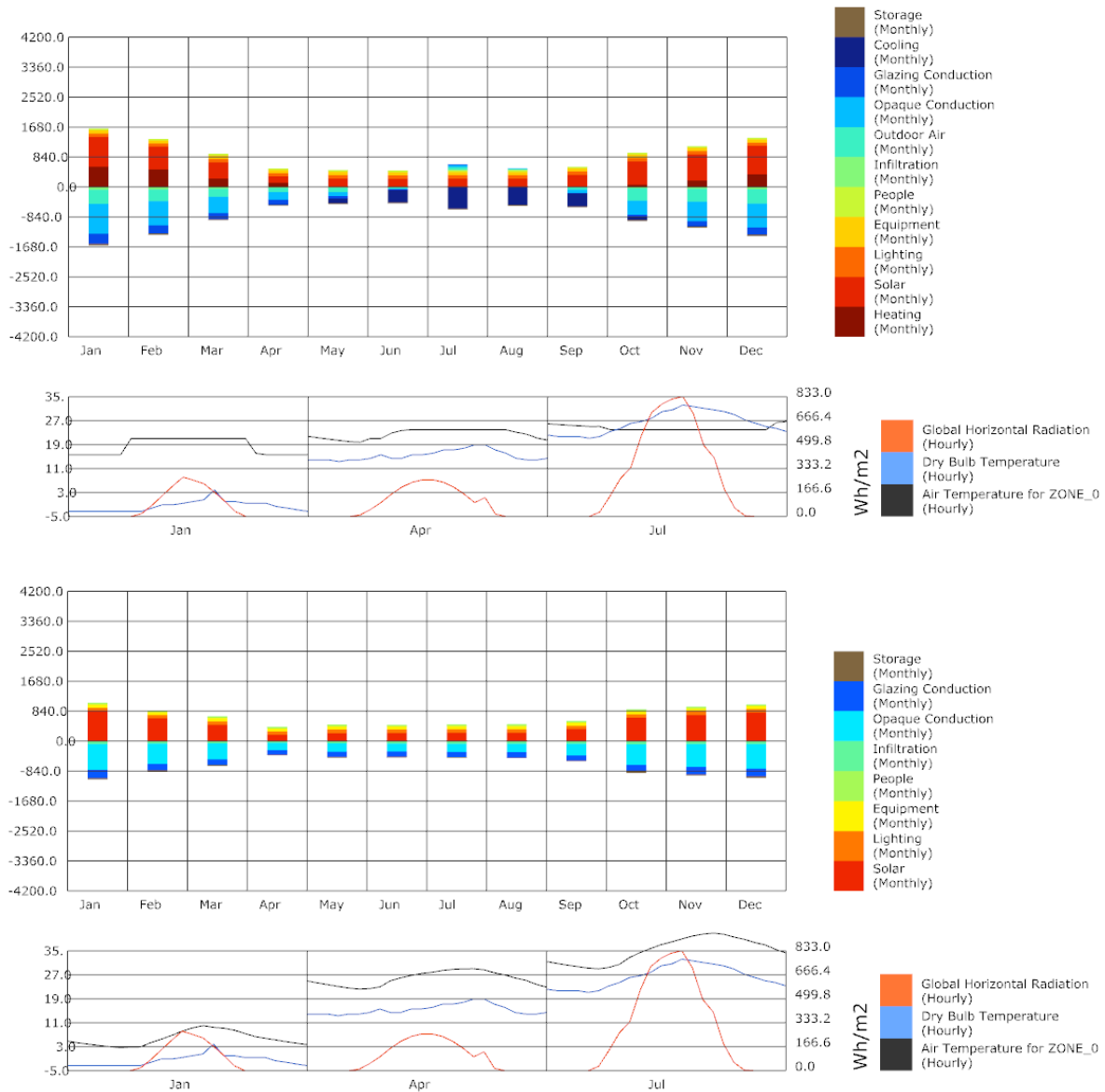
Cooling Load: 72.84 kWh/m<sup>2</sup>  
Heating Load: 120.82 kWh/m<sup>2</sup>  
Total Load: 193.67 kWh/m<sup>2</sup>



Window to Wall Ratio: N0, W0, S.7, E0, .4 long 4 Blinds, R14.8 Wall, R.7 Window, R34.4 Roof

## ARCH633 Environmental Systems I

Cooling Load: 68.80 kWh/m<sup>2</sup>  
 Heating Load: 67.95 kWh/m<sup>2</sup>  
 Total Load: 136.74 kWh/m<sup>2</sup>



Window to Wall Ratio: N0, W0, S.7, E0, .4 long 4 Blinds, R14.8 Wall, R.7 Window, R34.4 Roof

With 0 Air Changing time

Result: Total Load of 136.74

Most Effective Parameter:

Construction > Air Chaging Time > Window to Wall Ratio > Blinds

Temperature Rage inside the Container

In Summer: 20 - 31

In Winter: -4 - 3