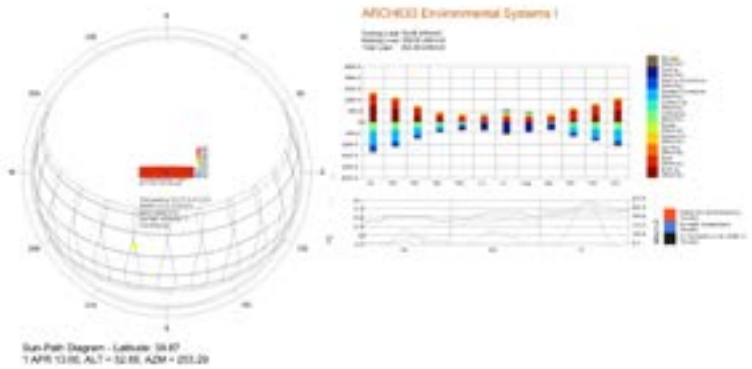
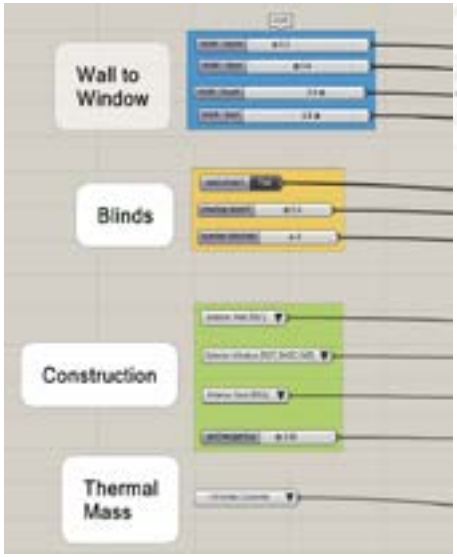
Design 1

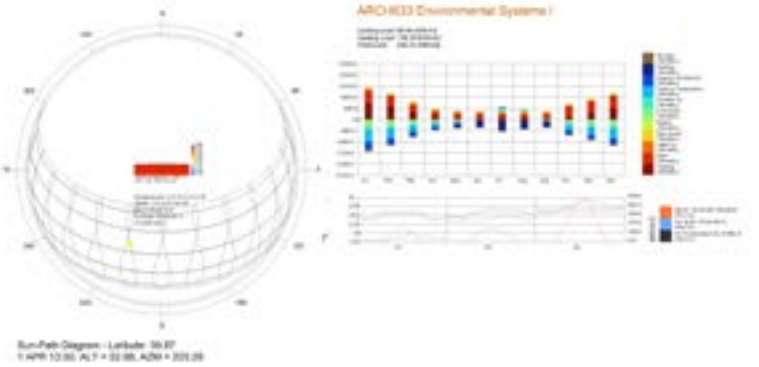


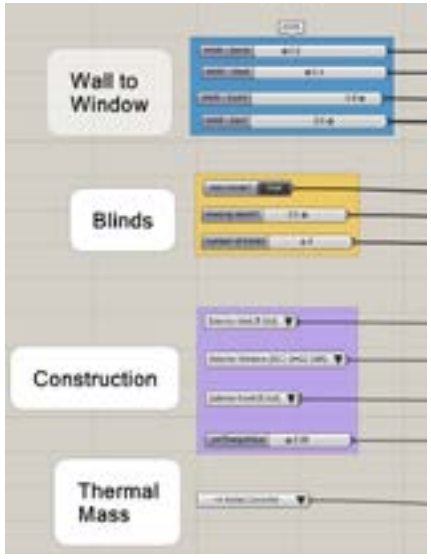


Cooling Load: 93.66 kWh/m2
Heating Load: 158.82 kWh/m2
Total Load: 252.48 kWh/m2

Because of sun's direction, the window to wall ratio on west designed bigger than north side. Window to wall on south and east side got same size. By giving number of blinds 4 and the depth of 0.4 could sligtly reduce total load compare to first total load which was 358.20 kWH/m2.

Design 2

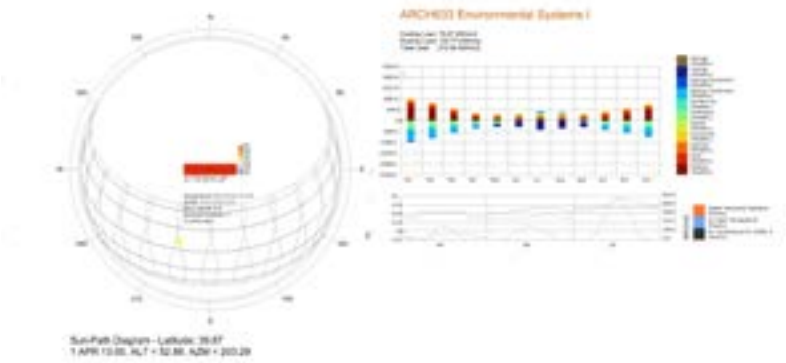


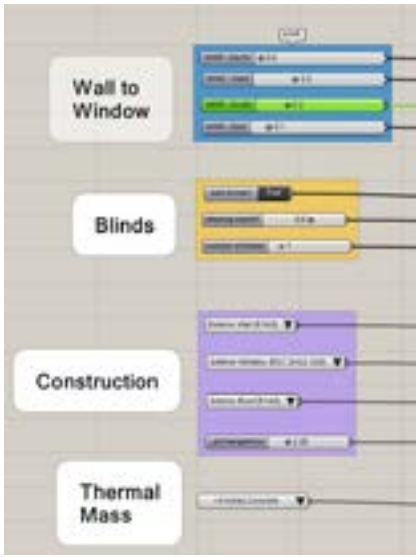


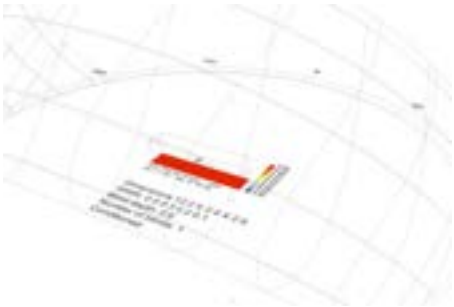
Cooling Load: 90.05 kWh/m2
Heating Load: 156.29 kWh/m2
Total Load: 246.34 kWh/m2

The wall to window on south is 0.2 bigger than east side by considering sun's direction. Moreover, the shading depth of blinds are 0.1 longer than previous design1. Therefore, the total load could decrease from 252.48 kWh/m2 to 246.34 kWh/m2.

Design 3



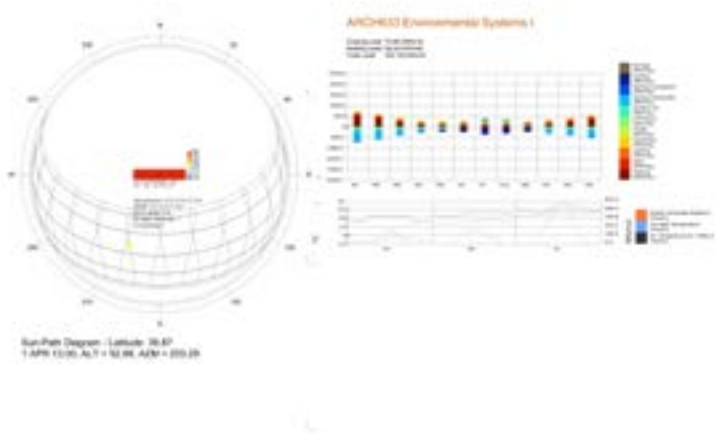


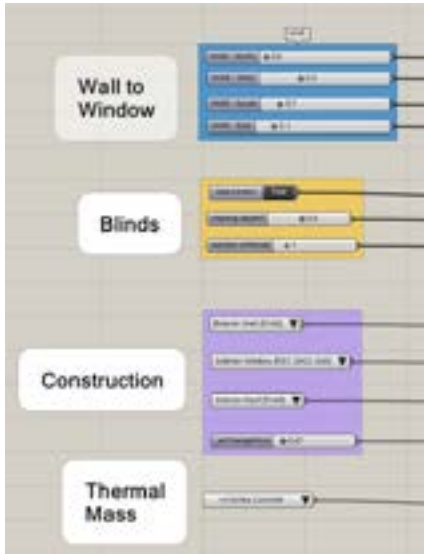


Cooling Load: 79.87 kWh/m2
Heating Load: 135.77 kWh/m2
Total Load: 215.64 kWh/m2

The wall to window on north side removed and the number of blinds reduced as 1 and the depth is o.1 longer than design2. Therefore, the total load could reach for 215.63 kWh/m2.

Design 4





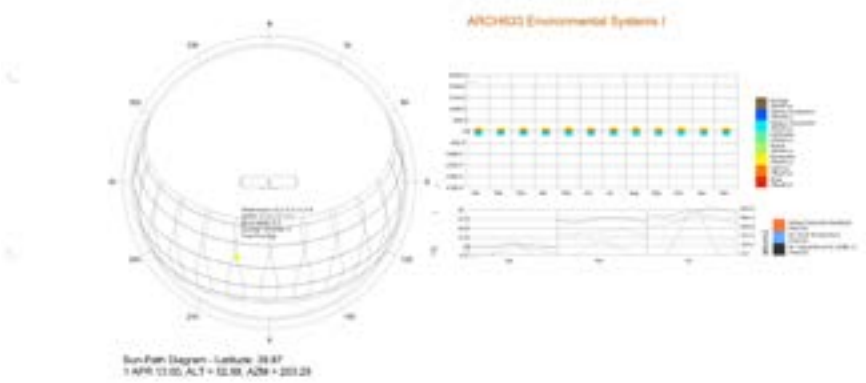
Cooling Load: 70.96 kWh/m2
Heating Load: 92.22 kWh/m2
Total Load: 163.18 kWh/m2

The wall to window on south and east both got 0.1 size. The depth of blinds decreased as 0.4. Moreover, by controlling air change hour as 0.47, the total load minimized from 215.64 kWh/m2 to 163.18 kWh/m2.

Which parameter(s) is/are the most effective?

By experiencing several expriments, the construction's air change hour was the most effective parameter. Reducing the air change hour less than 1 and more than 0.4 shows large difference of total load.

What is the temperature range inside the container in summer and winter with no systems after applying all your changes?



When there is no systems after applying all changes, the temperature range inside of the container in summer is 25~33 celcius. It is -3~3 celcius during winter. This means this container is really cold during the winter and very hot during summer. The total load was minimized as much as possible, but when we look at the temperature results without systems, the temperature range represents that the design is not very successful.