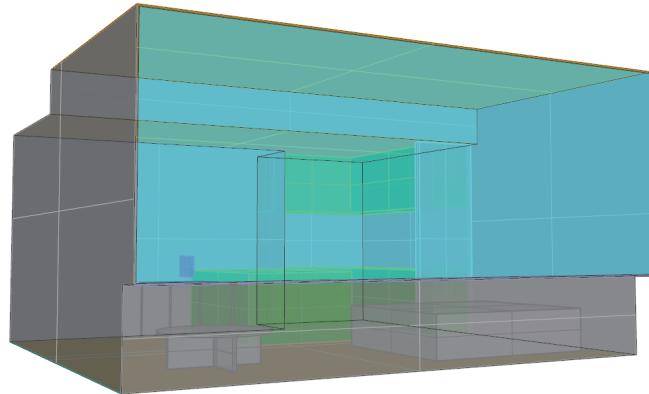


# Cylinders Shading \_daylight and energy loads

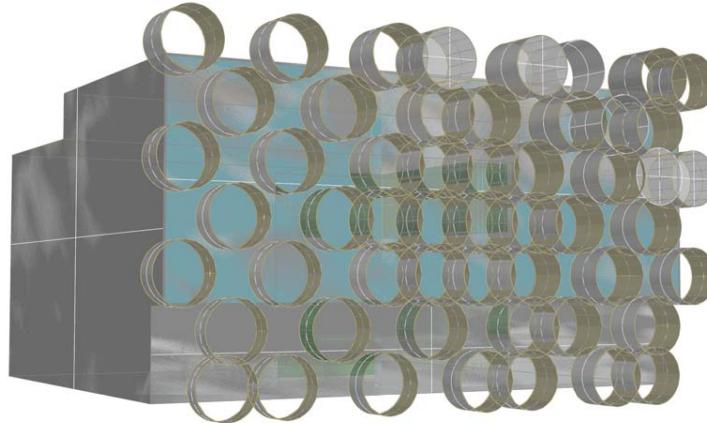
Arch753\_energy stimulation2\_Shin Yi Kwan

Base case



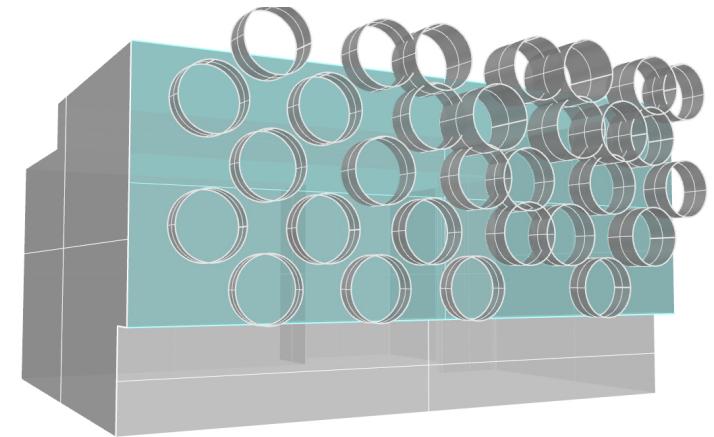
sDA 80.15%  
cooling load 2959.95 kwh  
heating load 277.49 kwh

Shading design case1



sDA 59.46%  
cooling load 506.77 kwh  
heating load 1604.02 kwh

Shading design case final



sDA 78.68%  
cooling load 792.86 kwh  
heating load 793.70 kwh  
lighting load 26.89 kwh

Shading design case1



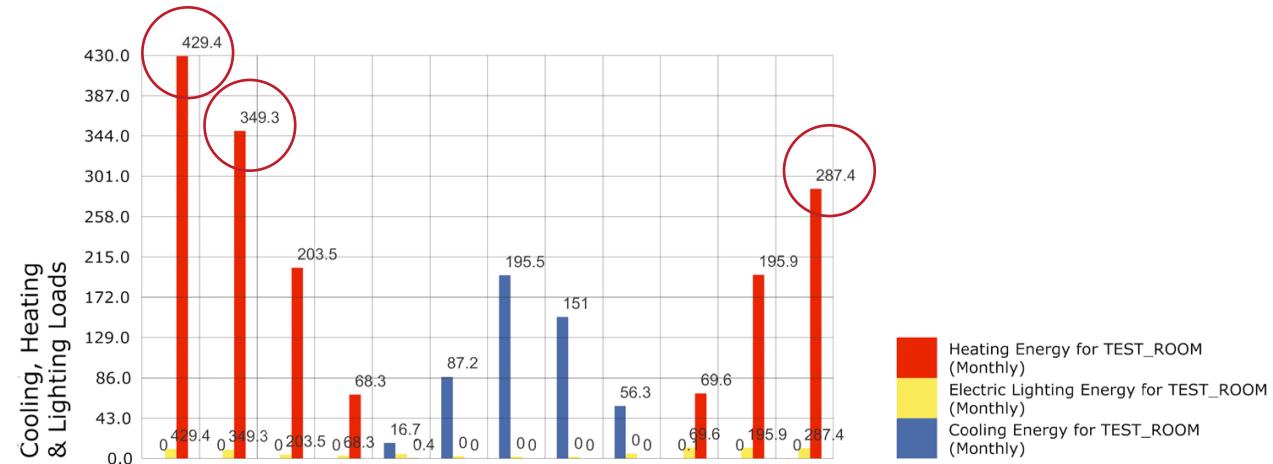
sDA 59.46%

cooling load 506.77 kwh

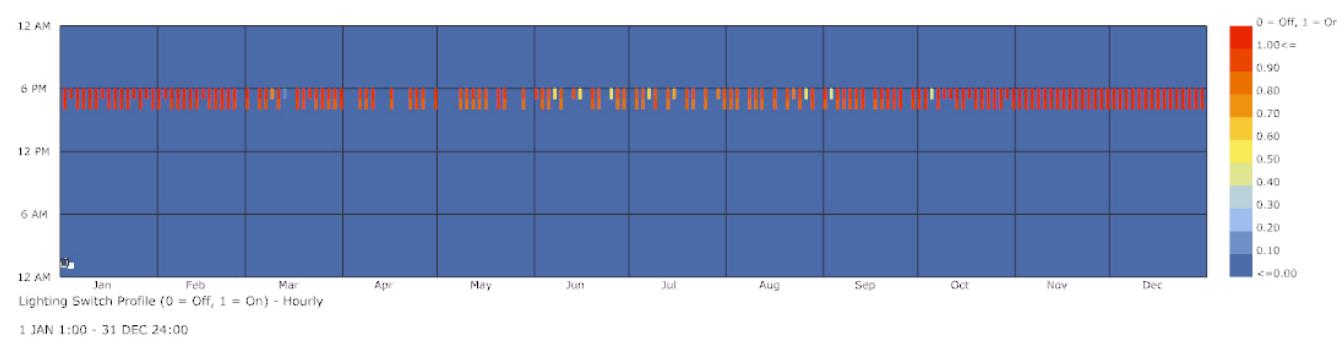
heating load 1604.02 kwh

lighting load

The design case1 is well daylight but the heating and cooling load are very high. To reduce the heating load, daylight should be introduced in the winter.



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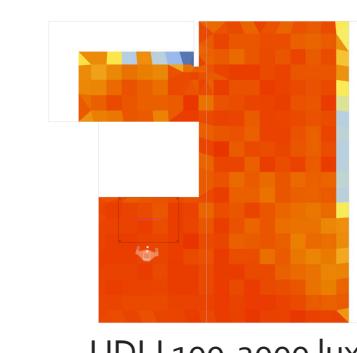


Lighting Switch Profile (0 = Off, 1 = On) - Hourly

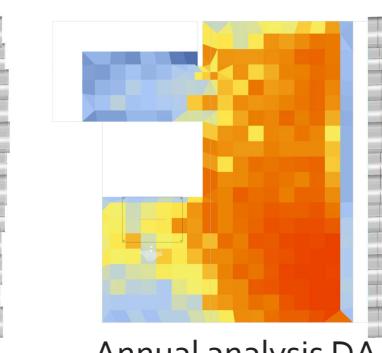
1 JAN 1:00 - 31 DEC 24:00



UDLI >2000 lux



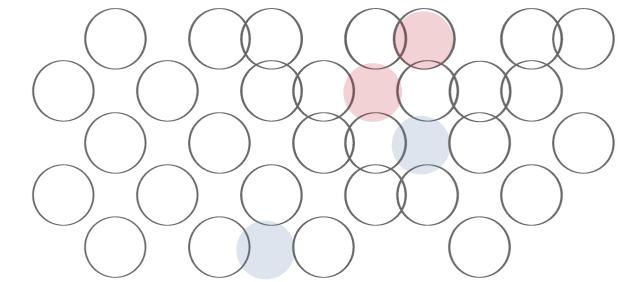
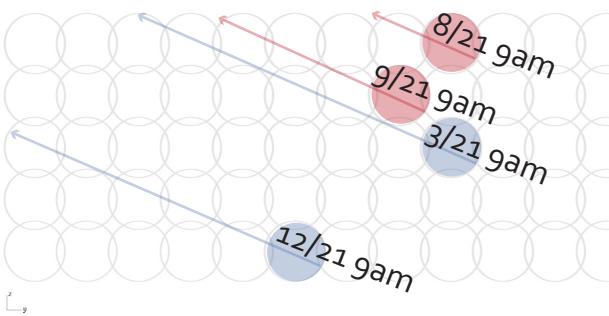
UDLI 100-2000 lux



Annual analysis DA

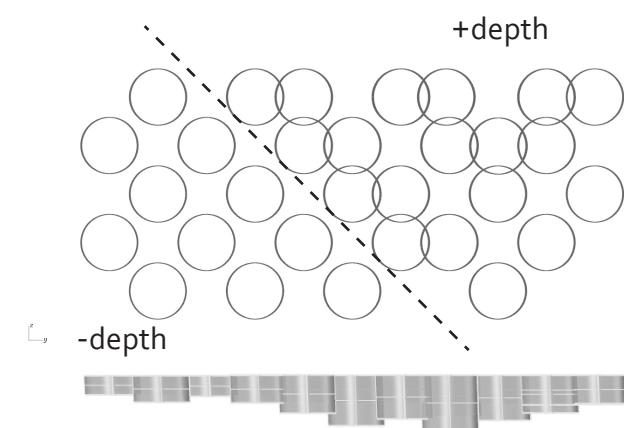
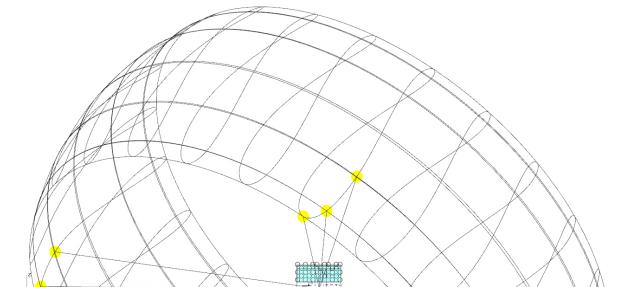
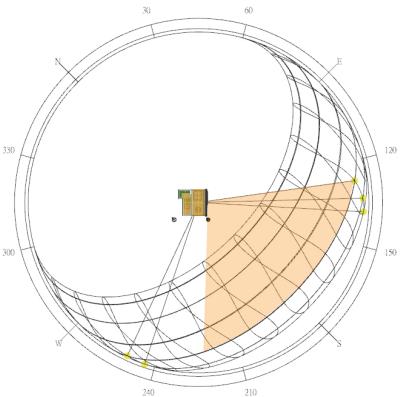
## First approach

Rearrange shading units base on direct sun light  
on Dec, Mar, Jun and Sep 21st.



## Second approach

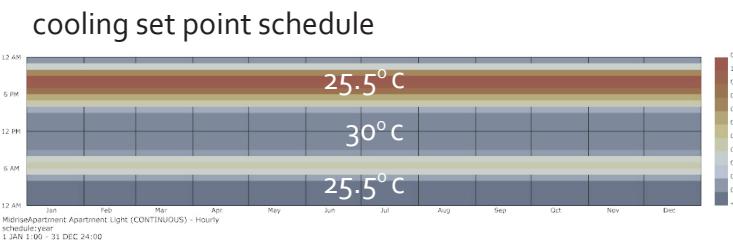
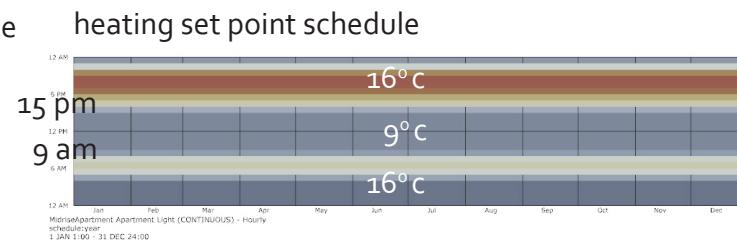
Reduce the depth of shading units base on Dec, Jan  
and Feb sun path to reduce heating load.



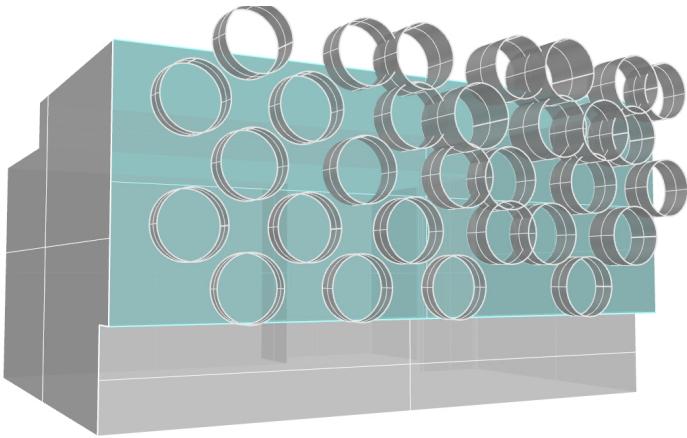
## Third approach

Adjust the heating set point schedule to turn on the  
heater when it's 9°C from 9 am to 15 pm and  
18°C from 16pm to 8am.

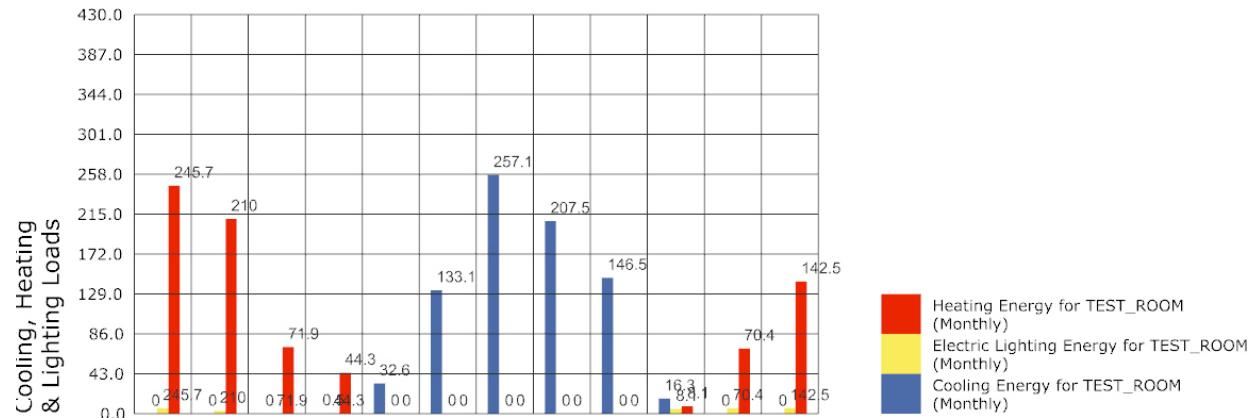
The cooling schedule is adjusted to turn on HVAC  
when it's 25.5°C from 16pm to 8am and 30°C from  
9am to 15pm.



Shading design case final



sDA 78.68%  
 cooling load 792.86 kwh  
 heating load 793.70 kwh  
 lighting load 26.89 kwh



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