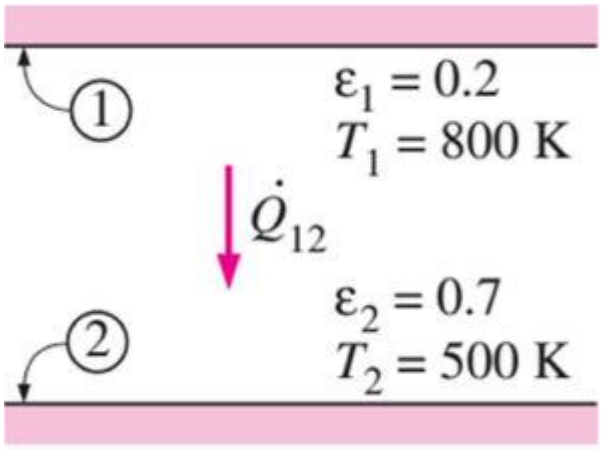
WEEK 6_BALAGANESAN NAVANEETHA

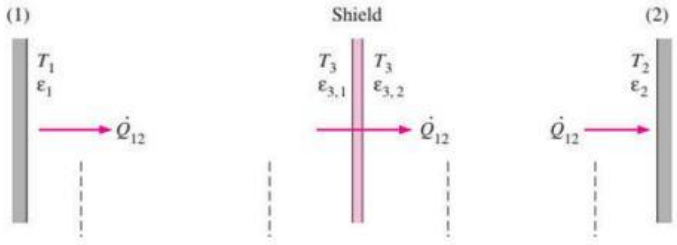


σ = 5.67 X 10^{-8}

Net heat transfer without shields

$\frac{Q}{A} = \frac{\sigma(T1-T2)}{\frac{1}{\epsilon 1}+\frac{1}{\epsilon 2}-1}$

= 3625.4 W/m^2



How many shields with epsilon =0.1should you add in order to have the new heat transfer rate to be 1% of the case without shields?

3625.4 x 1% = 36.25

$\frac{Q}{A} = \frac{\sigma(T1-T2)}{\frac{1}{\epsilon 1}+\frac{1}{\epsilon 2}-1+\frac{1}{\epsilon 3.1}+\frac{1}{\epsilon 3.2}-1+\cdots\ldots+\frac{1}{\epsilon n.1}+\frac{1}{\epsilon 4.1}-1}$

= 5.67 x $10^{-8}\frac{800(4)-500(4)}{\frac{1}{0.2}+\frac{1}{0.7}-1)+n.(\frac{1}{0.1}+\frac{1}{0.1}-1)}$ = 36.25

$\frac{19680.57}{5.42+19n}$ = 36.25

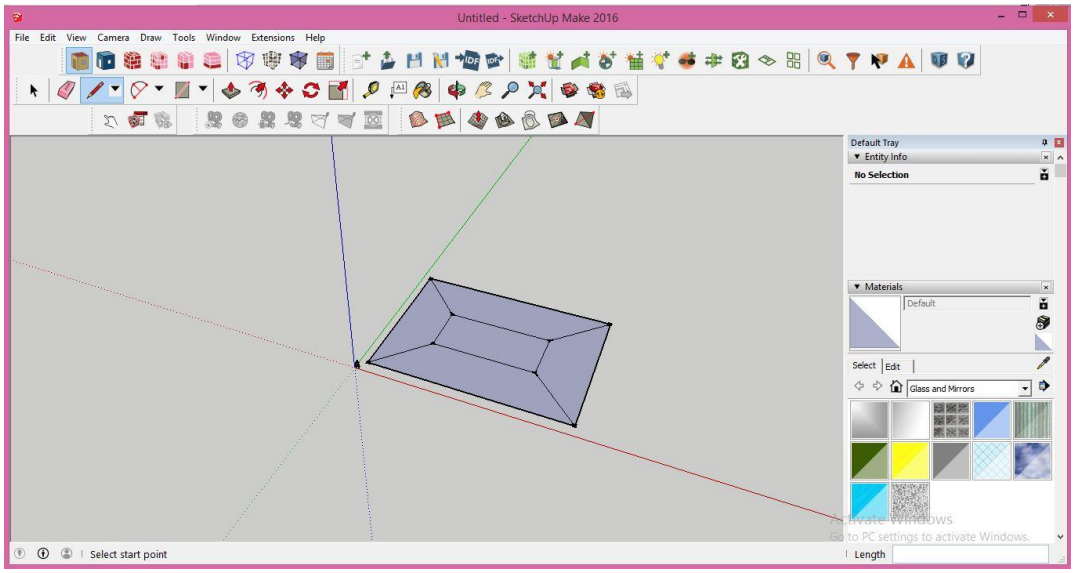
19680.57 = 36.25(5.42+19n)

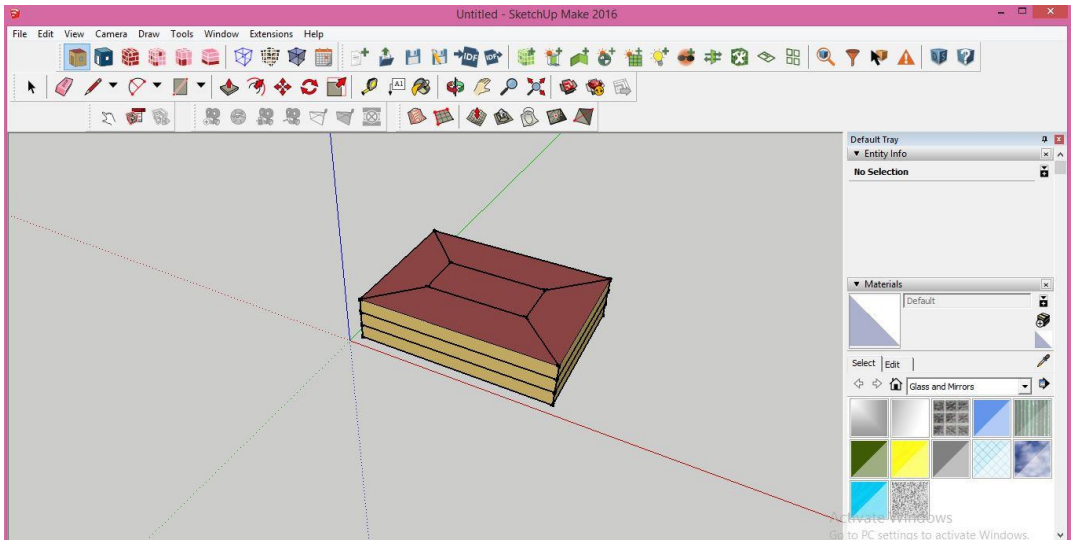
542.91-5.42 = 19n

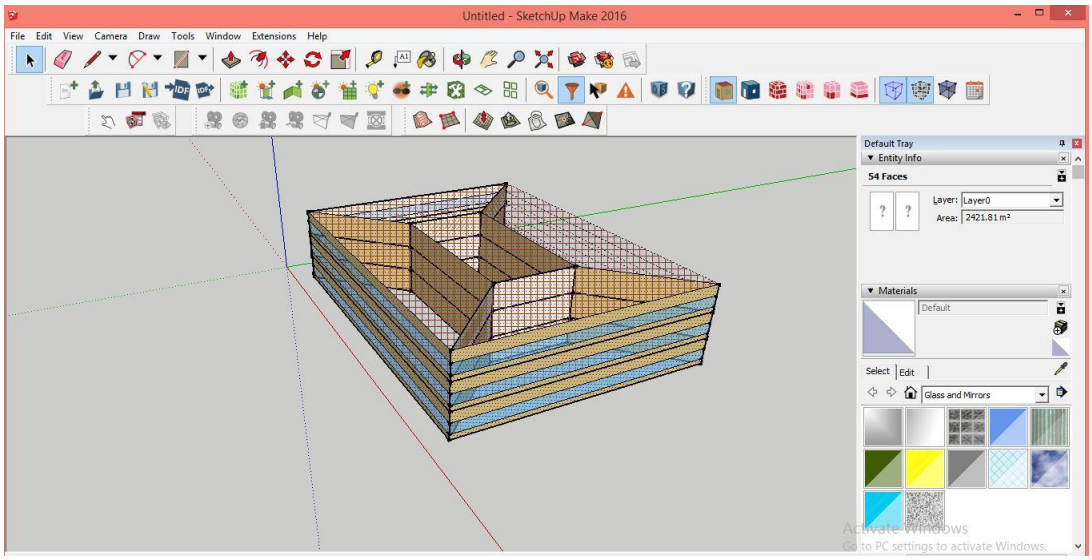
537.49 = 19n

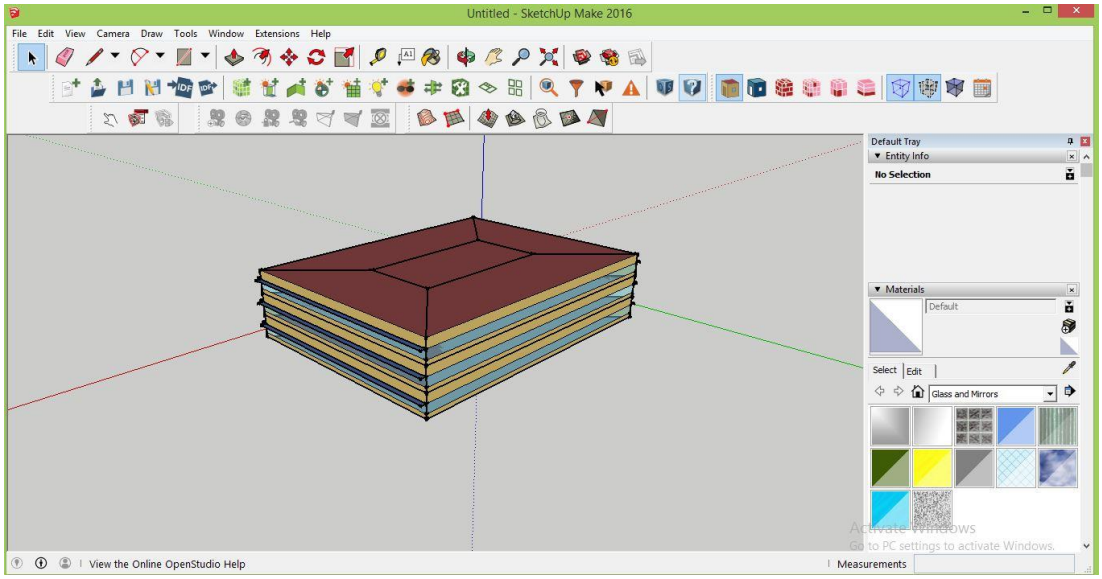
28.1 = n

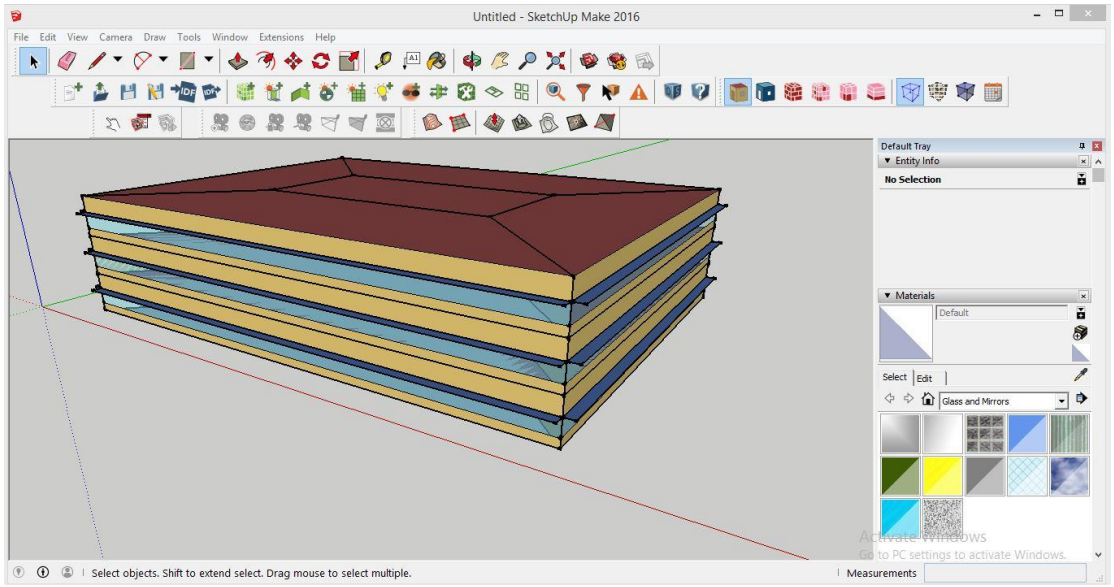
28 shields with ϵ=0.1 in order to lower the radiative heat transfer to 1%

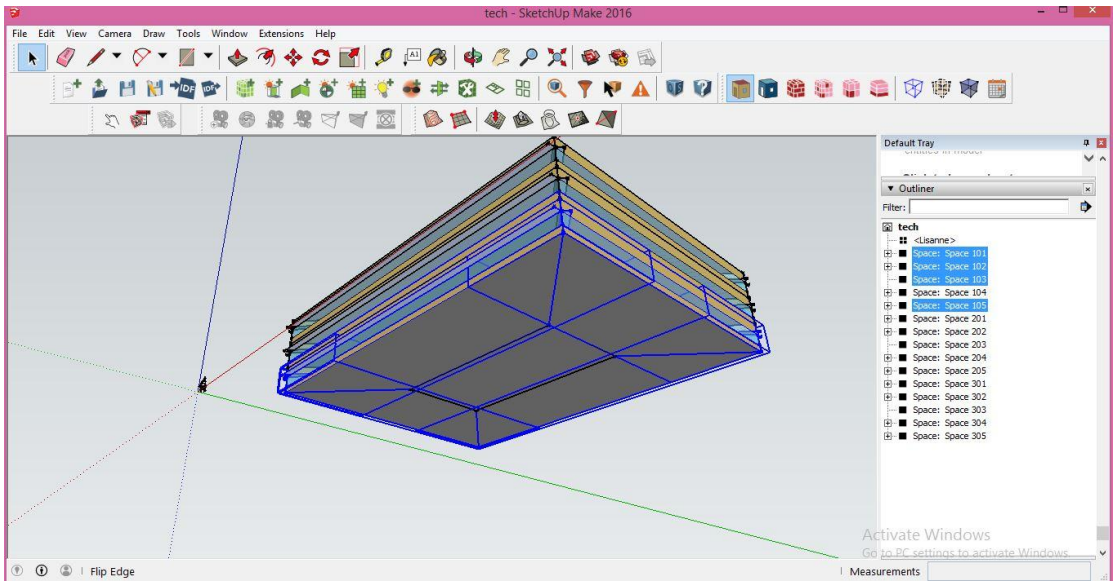

Untitled - SketchUp Make 2016
File Edit View Camera Draw Tools Window Extensions Help
Default Tray
Entity Info
No Selection
Materials
Default
Select Edit
Glass and Mirrors
Select start point
Length

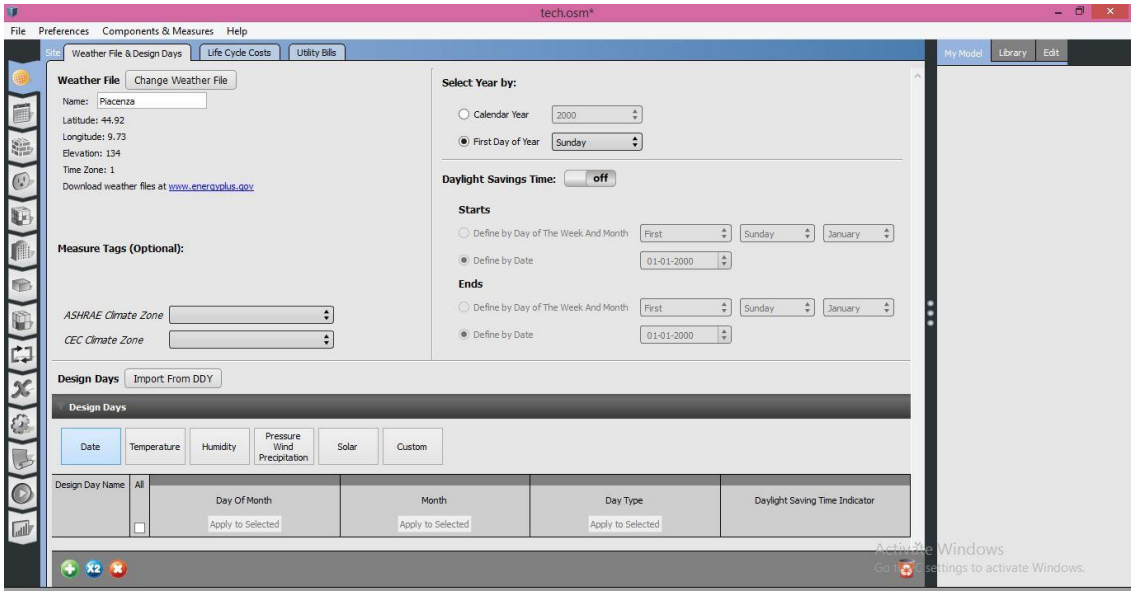

Untitled - SketchUp Make 2016
File Edit View Camera Draw Tools Window Extensions Help
Default Tray
Entity Info
No Selection
Materials
Default
Select Edit
Glass and Mirrors

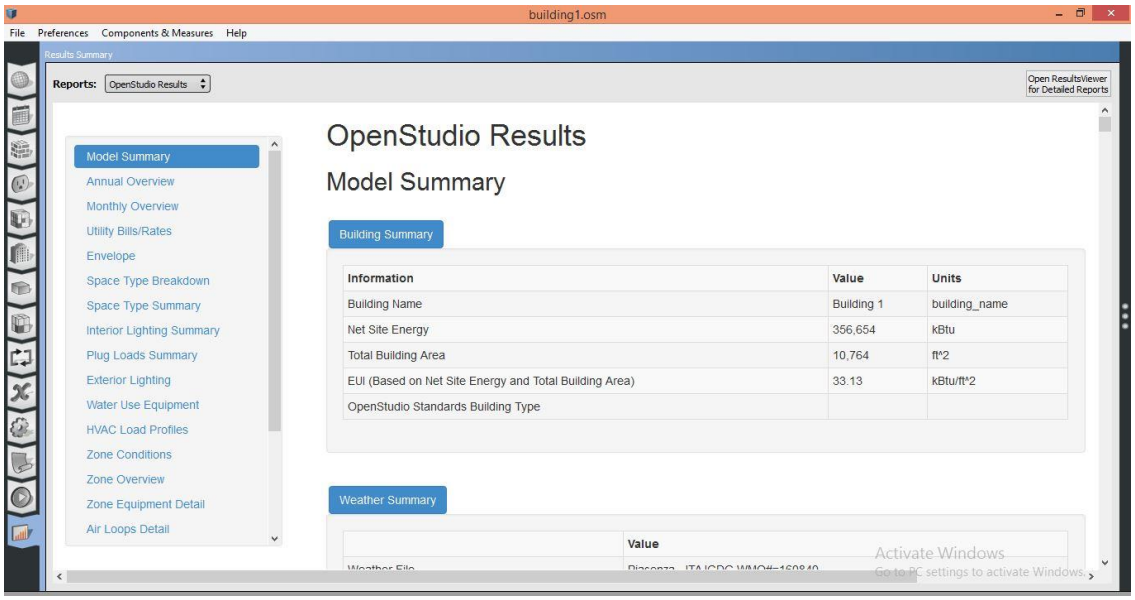

Untitled - SketchUp Make 2016
File Edit View Camera Draw Tools Window Extensions Help
Default Tray
Entity Info
54 Faces
Layer: Layer0
Area: 2421.81 m²
Materials
Default
Select Edit
Glass and Mirrors


Untitled - SketchUp Make 2016
File Edit View Camera Draw Tools Window Extensions Help
Default Tray
Entity Info
No Selection
Materials
Default
Select Edit
Glass and Mirrors
View the Online OpenStudio Help
Measurements


Untitled - SketchUp Make 2016
File Edit View Camera Draw Tools Window Extensions Help
Default Tray
Entity Info
No Selection
Materials
Default
Select Edit
Glass and Mirrors
Select objects. Shift to extend select. Drag mouse to select multiple.
Measurements


tech - SketchUp Make 2016
File Edit View Camera Draw Tools Window Extensions Help
Default Tray
Outliner
Filter:
tech
<Lisanne>
Space: Space 101
Space: Space 102
Space: Space 103
Space: Space 104
Space: Space 105
Space: Space 201
Space: Space 202
Space: Space 203
Space: Space 204
Space: Space 205
Space: Space 301
Space: Space 302
Space: Space 303
Space: Space 304
Space: Space 305
Flip Edge
Measurements


tech.osm*
File Preferences Components & Measures Help
Weather File & Design Days
Life Cycle Costs
Utility Bills
My Model
Library
Edit
Weather File
Change Weather File
Name: Piacenza
Latitude: 44.92
Longitude: 9.73
Elevation: 134
Time Zone: 1
Download weather files at www.energyplus.gov
Measure Tags (Optional):
ASHRAE Climate Zone
CEC Climate Zone
Select Year by:
Calendar Year
2000
First Day of Year
Sunday
Daylight Savings Time:
off
Starts
Define by Day of The Week And Month
First
Sunday
January
Define by Date
01-01-2000
Ends
Define by Day of The Week And Month
First
Sunday
January
Define by Date
01-01-2000
Design Days
Import From DDY
Design Days
Date
Temperature
Humidity
Pressure Wind Precipitation
Solar
Custom
Design Day Name
All
Day Of Month
Apply to Selected
Month
Apply to Selected
Day Type
Apply to Selected
Daylight Saving Time Indicator
Activate Windows
Go to PC settings to activate Windows.


building1.osm
File Preferences Components & Measures Help
Results Summary
Reports:
OpenStudio Results
Open ResultsViewer for Detailed Reports
Model Summary
Annual Overview
Monthly Overview
Utility Bills/Rates
Envelope
Space Type Breakdown
Space Type Summary
Interior Lighting Summary
Plug Loads Summary
Exterior Lighting
Water Use Equipment
HVAC Load Profiles
Zone Conditions
Zone Overview
Zone Equipment Detail
Air Loops Detail
OpenStudio Results
Model Summary
Building Summary
Information
Value
Units
Building Name
Building 1
building_name
Net Site Energy
356,654
kBtu
Total Building Area
10,764
ft^2
EUI (Based on Net Site Energy and Total Building Area)
33.13
kBtu/ft^2
OpenStudio Standards Building Type
Weather Summary
Value
Activate Windows
Go to PC settings to activate Windows.