WEEK6

Considering the same example you solved in the previous assignment (radiative heat transfer between two parallel plates), how many shields with epsilon = 0.1 should you add in order to have the new heat transfer rate to be 1% of the case without shields?

$$\dot{Q}_{12Nshields} = \frac{E_{b1} - E_{b2}}{\frac{1-\varepsilon_1}{A\varepsilon_1} + \frac{1}{AF_{13}} + \frac{1-\varepsilon_3}{A\varepsilon_3} + N \times \left(\frac{1-\varepsilon_3}{A\varepsilon_3} + \frac{1}{AF_{33}} + \frac{1-\varepsilon_3}{A\varepsilon_3}\right) + \frac{1-\varepsilon_3}{A\varepsilon_3} + \frac{1}{AF_{32}} + \frac{1-\varepsilon_2}{A\varepsilon_2}}$$

$$= \frac{A\sigma(T_1^4 - T_2^4)}{\left(\frac{1}{\varepsilon_1} + \frac{1}{\varepsilon_3} - 1\right) + N\left(\frac{1}{\varepsilon_3} + \frac{1}{\varepsilon_3} - 1\right) + \left(\frac{1}{\varepsilon_3} + \frac{1}{\varepsilon_2} - 1\right)} = \frac{A\sigma(T_1^4 - T_2^4)}{\left(\frac{1}{\varepsilon_1} + \frac{1}{\varepsilon_2} - 1\right) + (N+1)\left(\frac{1}{\varepsilon_3} + \frac{1}{\varepsilon_3} - 1\right)}$$

$$\frac{\dot{Q}_{12Nshields}}{\dot{Q}_{12}} = \frac{\left(\frac{1}{\varepsilon_1} + \frac{1}{\varepsilon_2} - 1\right) + (N+1)\left(\frac{1}{\varepsilon_3} + \frac{1}{\varepsilon_3} - 1\right)}{\frac{1}{\varepsilon_1} + \frac{1}{\varepsilon_2} - 1} = \mathbf{1} + (\boldsymbol{N}+\mathbf{1})\frac{\frac{1}{\varepsilon_3} + \frac{1}{\varepsilon_3} - 1}{\frac{1}{\varepsilon_1} + \frac{1}{\varepsilon_2} - 1} = 100$$

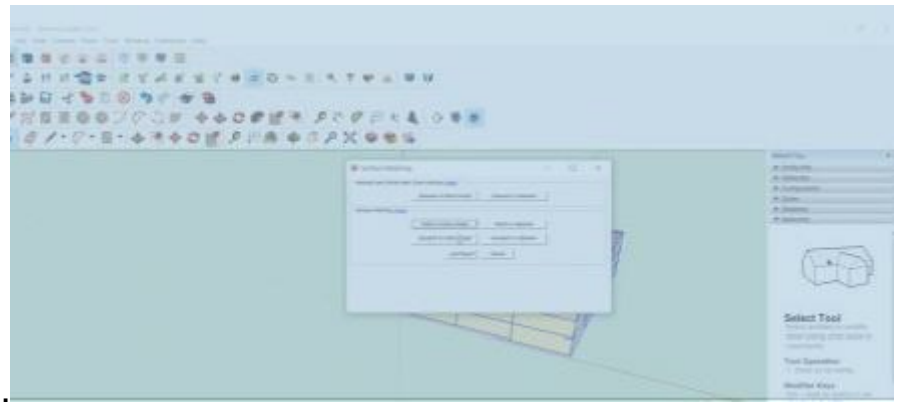
$$\Leftrightarrow \boldsymbol{N} = 99 \times \frac{\frac{1}{\varepsilon_1} + \frac{1}{\varepsilon_2} - 1}{\frac{1}{\varepsilon_3} + \frac{1}{\varepsilon_3} - 1} - 1 = 99 \times \frac{\frac{1}{0.2} + \frac{1}{0.7} - 1}{\frac{1}{0.1} + \frac{1}{0.1} - 1} - 1 \approx 27.3$$

The first stage in making the building is to set the top view, then draw it.

next step is offset and then make it three level .

In next step adding shader.

Then adding information with open studio and then adding weather data



And proccesing and end to result.