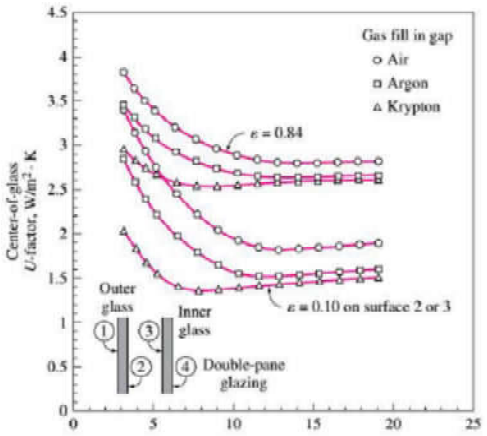
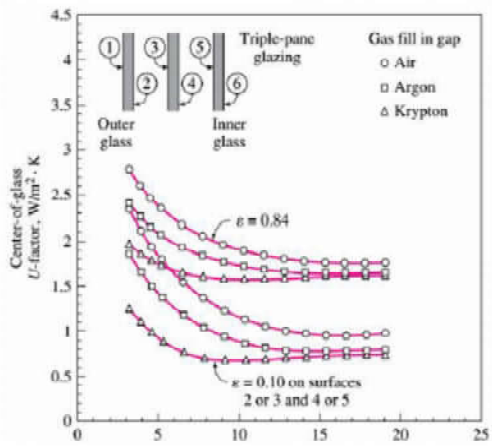
Week8_nkiarostami

Task 1





There are some notable data In the diagrams:

When the thickness of the gap is 13 mm when we change the gap layer from Air to Argon the U factor will decrease from 2.8 to 2.65 W/m2.k. and when we change the gap to Krypton, U factor o the glass center will decrease from 2.8 to 2.6 W/m2k.

Adding an extra pane: When the thickness of the air gap is 13 cm and we add an extra pane, the U factor of glass center decrease from 2.8 to 1.8 W/m2.k.

By coating the glass with a film of low emissivity (0.1) when the gap thickness is 13 cm and the gap layer is air, U factor of the glass center decreases from 2.8 to 1.8 W/m2.k.

Task 2

Delta T cooling= 31.9 - 24 = 7.9 k
Delta T heating= 20 - (-4.8) = 24.8 k
DB range in the table: 11.9 k
q Window west = 14.4 m2 * CF window west = 3352.07 W
CF window west = CF window west Heat transfer part + CF window west Irradiation part)
= [2.84 W/m2k . (7.9 k - 0.46 * 11.9 k)] + [(559+188) * 0.54 * 1 * 0.56

Heating load of the fixed window on west
Q window west = A*HF window west = A* U window west* Delta T heating =
14.4 m2 * 2.84 w/m2k * 24.8 K = 1014.22 W