Week 5 MONDRAGON RASCON, ALEJANDRA

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#Week 5

Task 1 summary of the topics about radiative heat transfer , the definitions of emissivity, absorptivity and reflectivity, the view factor, the heat exchange betweeen two black surfaces,the heat exchange between the two gray surface and finally the definition of radiative resistances

RADIATIVE HEAT TRANSFER: Is produced by a hot object, it can be gas or liquid,

EMISSIVITY: Is the intesity of the radiation emited by a surface. Is constant. Emissivity of a real surface varies with the temperature of the surfaces, the wavelength and the direction of the emitted radiation.

ABSORPTIVITY: is the relation between absorbed radiation and incedent radiation, that results as the capacity of the body to absorbe energy.

REFLECTIVITY: the relation between reflected radiation and incident radiation, is the capacity of the body tu reflect the energy.

VIEW FACTOR: Is a geometrical quantity, a fraction of the energy leaving the surfaces, that is intercepted by and other surface.

HEAT EXCHANGE BETWEEN TWO BLACK SURFACES: is the difference between the radiation leaving the surface 1 that intersect the surface 2 minus radiation leaving the surface 2 that intersect surfaces 1.

HEAT EXCHANGE BETWEEN TWO GRAY SURFACES: the addition between the radiation emitted by the surface plus the radiation reflected by the same surface.

RADIATIVE HEAT TRANSFER RESISTANCES: is the capacity of the object to restair the heat transfer

Task 2 Solve the last example you solved in the class (radiative heat exchange between two parallel plates) a while considering the two emissivities to be 0.1, what can you conclude from the result?

A= 1.5 m2
$\sigma = \ 5.67\ x\ 10^{-8}$
$T1 = 308\ ° \ k$
$\mathrm{T2} = 298° \ \mathrm{k}$
$\epsilon_1 = 0.1$

$$Q_{12} = \frac{A\sigma\ (T_1^4\ -\ T_2^4)}{\frac{1}{\epsilon_1} + \frac{1}{\epsilon_1} - 1} = \frac{1.5\ *\ 5.67\ x\ 10^{-8}\ (308^4\ -\ 298^4)}{\frac{1}{0.1} + \frac{1}{0.1} - 1} = 4.9823\ \frac{W}{m^2}$$

In the exchange of energy has an incresing difference between ϵ_1 =0.01 and 0.1