Radiative heat transfer: anything with a temperature higher than zero radiates heat

Emissivity: the ability to send heat is emissivity which for a blackbody is 1 and for a shiny mirror is 0

Absorptivity: the degree which any object can absorb energy which here means the amount of heat they can absorb

Reflectivity: the amount of energy that the surface can reflect and not absorb

The view factor : a part of the radiation that leaves from surface A and reaches surface B and it is based on the area of the surfaces

Net heat exchange between two black surfaces: black bodies absorb all the energy emitted to their surface and when two black bodies have a temperature higher than zero the only difference between them is the area and temperature

E black object = σ T4

So Q1 to 2= Q emitted by 1 and captured by 2 - Q emitted by 2 and captured by 1

Q emitted by 1 and captured by 2 =A1 x F12 x E1

Q emitted by 2 and captured by 1=A2 x F21 x E2

Q1 to 2= A1 x F12 x σ (T1 4 – T2 4)

Net heat exchange between two grey surfaces

Compared to black bodies, gray surfaces have reflectivity. So in addition to the emitted radiations/absorbed radiations, we have the reflective radiations. We calculate the difference between the radiations leaving S1 and captured by S2, called J, and the radiations incident on S1, called G1. J = Radiation emitted by the surface + Radiation reflected by the surface J = ε . σ . T4 + ρ . G Q=A . (J – G)

Radiative heat resistance

Is a measure to see how much of the energy is converted to radiation

$\dot{Q}_{12} = A * (5.670 * 10^{-8} * (800^4 - 500^4))/((1/0.1) + (1/0.1) - 1 = A * 19680,57/19 = 1035,82 * A$ [W]

Relation between the amount of energy gets affected directly with the emissivity

So if we decrease it the whole energy moved goes lower and vice versa