martes, 29 de octubre de 2019 3:44 p.m.

Student **Lizet Bonilla Grajales**

1. Complete the modified example of simplified wall calculations that you went through in the assignment of week 3 and find the total heat transfer through wall

	Wood	Insulation
Outside air winter	$0{,}030\frac{m^2C}{W}$	$0{,}030\frac{m^2C}{W}$
Wood Bevel	$0{,}14\frac{m^2C}{W}$	$0{,}14\frac{m^2C}{W}$
Plywood	$0{,}011\frac{m^2C}{W}$	$0{,}011\frac{m^2C}{W}$
Urethane rigid foam 90 mm Insulation	$--$	$3{,}52\frac{m^2C}{W}$
Wood stud	$0{,}63\frac{m^2C}{W}$	$--$
Gypsum Board	$0{,}079\frac{m^2C}{W}$	$0{,}079\frac{m^2C}{W}$
Inside Air	$0{,}12\frac{m^2C}{W}$	$0{,}12\frac{m^2C}{W}$
R Value	$\mathbf{1{,}01}\frac{\boldsymbol{m^2C}}{\boldsymbol{W}}$	$\mathbf{3{,}9}\frac{\boldsymbol{m^2C}}{\boldsymbol{W}}$

$$U_{Wood} = \frac{1}{R_{wood}} = \frac{1}{1.01\ \frac{\boldsymbol{m^2C}}{\boldsymbol{W}}} = \mathbf{0.990}\frac{\boldsymbol{m^2C}}{\boldsymbol{W}}$$

$$U_{Ins} = \frac{1}{R_{Ins}} = \frac{1}{3.9\ \frac{m^2C}{W}} = 0.256\frac{m^2C}{W}$$

$$U_{Total} = 0.25 * U_{Wood} + 0.75 * U_{Ins}$$

$$= 0.25 * 0.990\frac{m^2C}{W} + 0.75 * 0.256\frac{m^2C}{W}$$

$$= 0.2475\frac{m^2C}{W} + 0.192\frac{m^2C}{W}$$

$$= 0.4395\frac{m^2C}{W}$$

$$Q_{total} = U_{Total} + A_{Total} + \Delta_{Total}$$

$$= 0.4395\frac{m^2C}{W} + 100m2 + 24°C$$

$$= 1054.8W$$

2. In 2 pages write a summary of what you have learnt in this session about radiation and radiative heat transfer.

Radiation is the way energy is passed through waves and through empty space. This means that it doesnt need the presence of any material. It is calculated by electromagnetic waves which represent how much energy is transported due to the swifting of the configuration of atoms or molecules in it.

These waves have two main properties : frequency and wavelenght whose characteristics depend on the speed of propagation , the speed of light in vacuum space, the index of refraction of the space.

Thermal radiation is present in everything around us. Even objects whose temperature is above zero, emit a small amount of it.

In terms of light, radiation is also important. Depending on how much a body can emit, it might be visible for the human eye and for instances, in the case of colors, it can be

classified on its wavelenght rate and be or not in the electromagnetic visible spectrum.

Ultraviolet radiation goes between a ratio of 0.01 to 0.40 um and infrared radiation goes between 0.76 to 100um.