

Technical Environmental System/ Dr. Behzad NAJAFi

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TASK 1 :

Provide a summary of the main concepts that went through about solar radiation (formulas are not needed)

Solar radiation, often called the solar resource, is a general term for the electromagnetic radiation emitted by the sun. Solar radiation can be captured and turned into useful forms of energy, such as heat and electricity, using a variety of technologies. However, the technical feasibility and economical operation of these technologies at a specific location depends on the available solar resource.

About half of the radiation is in the visible short-wave part of the electromagnetic spectrum. The other half is mostly in the near-infrared part, with some in the ultraviolet part of the spectrum. The units of measure are Watts per square meter.

Solar radiation absorption is due to some atmospheric components, especially ozone, water and carbon dioxide. Stratospheric ozone absorbs all the ultraviolet component of the solar radiation for wave length less than $0.29\mu\text{m}$, water vapour has important absorption bands in the infrared field, centred at 1.0, 1.4 and $1.8\mu\text{m}$. Over $2.5\mu\text{m}$ the atmosphere becomes practically opaque to solar radiation for the strong absorption due to water and carbon dioxide.

The maximum yearly average solar radiation density is the solar constant, which is the solar irradiance, its value is 1367 W/ m^2 .

TASK 2 :

Create a pdf file with screenshots of all of the steps we went through in the second lesson on open Studio







