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Summary of the investigation into energy production by photovoltaic's in Finland and its efficiencies in the local climate conditions

Free for all, like wind, solar energy has many advantages in the renewable energy arena. The Earth receives 174 petawatts (PW) of incoming solar radiation (insolation) at the upper atmosphere.
Solar energy is available almost anywhere on Earth and can be converted directly to electricity and heat.

Finland, being in the northern Europe, does have the problem of major annual difference of sunlight and photovoltaic systems to produce electric energy are not yet introduced into the renewable energies market.

Current study into the photovoltaic systems is carried out to show that there is a potential in these latitudes for the solar energy to be collected. This could one day highly contribute to the renewable energy production in this country and probably in the countries of the same latitude.

Current investigation into the operation of photovoltaic systems is done for the first sustainable swimming pool to be constructed in the city of Pori, Finland.
A pilot scale laboratory is installed at the Satakunta University of Applied Sciences, where a study into performance of the PV systems with different inclination angles arrangements and performance optimization is carried out. It is a massive project to take many years but current investigation will be showing the current status and results achieved for the moment.

Some electrical and environmental tests will be performed on the solar cell. A variety of parameters can be extracted from the Intensity-Voltage curves; these include the output current and voltage, maximum output power, fill factor, resistivity, etc. Electrical characterization is important in determining how to make the cell as efficient as possible with minimal losses. There are 2 methods discussed for finding the optimal orientation and inclination of the PV system. For the pilot system 3 PV units are used all set to a different inclination, in order to analyze the data received and find the optimal one.