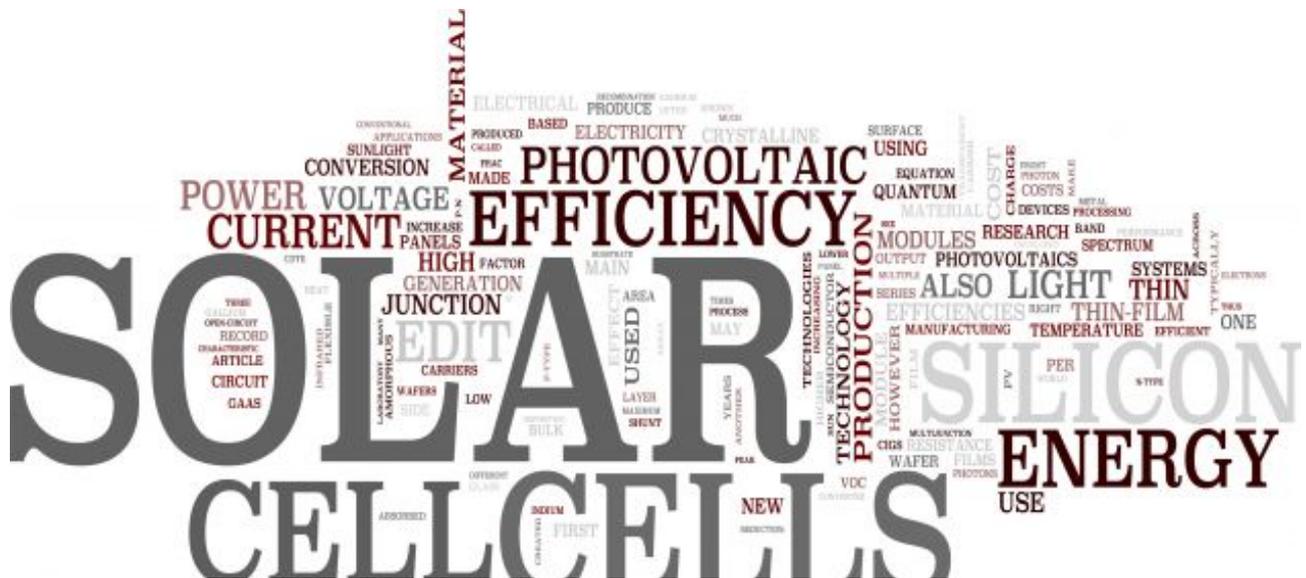




SOLAR INNOVA

looking for the future

PV PANELS WEAK LIGHT OF SOLAR INNOVA MODULES





WEAK LIGHT OF SOLAR INNOVA PV MODULES



The meaning of Weak Light

Blue sky and sunshine, vertical incidence of light on the modules and cool temperatures these are ideal conditions for photovoltaic systems in which their full potential can be realised. During the course of the day and throughout the year the intensity of light naturally fluctuates, e.g. in the twilight, in hazy, cloudy condition or in the shade and with a non-vertical angle of incidence. Around two-thirds of annual irradiation is weak light even in a sunny location such as Freiburg in Breisgau in Germany. The expression "weak light" is used to describe an intensity of irradiation that is significantly less than 1000 W/m². The range of performance a module can achieve under these conditions is referred to collectively as its weak light performance.

The rated capacity of a solar module with different levels of irradiation is determined as follows. The nominal output of a solar module is defined according to an industrial standard by means of a standard output measurement with 1000 W/m² irradiation and a module temperature of 25° C. The values obtained from measuring the output at irradiation levels of 200 W/m² and 800 W/m² are also used.

Influence of weak light on the production of solar power

A photovoltaic system also produces electricity even when ideal conditions do not prevail so long as light continues to fall on it. The power yield of a photovoltaic system falls as light conditions get poorer. The extent of the actual power loss that accompanies the falling incidence of light ultimately depends on the solar module used.

Solar Innova modules are also a convincing proposition with an above average efficiency in the weak light range. This means that they are particularly efficient when it comes to converting the energy obtained from weak light into electrical power. This provides the system operator with a higher yield and therefore a higher rate of return.

How the capability of a solar system to utilise weak light irradiation and its performance are taken into account in standard simulation programs when calculating the yield forecasts

Professional advice and planning of a photovoltaic system also includes a yield forecast and economic viability calculations. In addition to the performance data of the system, it also takes into account the regional irradiation data and the service life of the system, as well as the costs for the system, installation and financing. This means that the likely rate of return for the investor and system operator can be calculated. The standard simulation programs used to plan systems only use standard measured values as the basis for crystalline modules and perform their analysis based on the assumption that the power loss of the system in weak light has a linear characteristic. This is normally used as the basis for compiling an economic viability calculation.



Weak light characteristics under scrutiny - Solar Innova modules increases efficiency

Measurements carried out by TÜV Rheinland (technical inspection laboratory in Germany) have recently shown that the already high efficiency and therefore the yield of Solar Innova modules increases significantly under standard conditions in what is referred to as the weak light range. A significantly lower power loss therefore occurs in Solar Innova modules in practise in the weak light range than forecast by standard simulation programs. This is one of the reasons why solar energy systems containing Solar Innova modules achieve significantly higher yields.

Forecast versus practise - 3% increased yield with Solar Innova

The outstanding weak light performance of Solar Innova modules ensures an average annual yield that is 3% more than the yield forecast by standard calculation programs. This applies for all locations irrespective of whether the incidence of sunlight is low, high or very high. More yield = improved return = faster ROI of system.

Consistently high quality "made by Solar Innova"

Wafers, cells and modules are produced in a fully-automated manufacturing process under one roof at the Solar Innova module production facility. This means that the cell characteristics can be adapted in order to achieve the best possible module characteristics. Moreover, the cells are carefully tested then selected on the basis of specific performance values and processed to maximise the performance characteristics of any given module. Modules in Solar Innova standard series owe their outstanding weak light characteristics to the high quality of materials used and also the manufacturing process.

Even more benefits with the Solar Innova solar system

The inverter must also be able to adapt to a range of conditions in order to obtain the best possible yield. The inverters adapt their optimum operating point to the incoming current automatically within seconds and can therefore react in split seconds to changing conditions such as passing clouds or changing weather conditions and daylight patterns. The performance characteristics of Solar Innova modules and inverters are harmonised and both achieve optimum efficiency in the same working range. When combined in the same system, they are an ideal way in which to achieve high yields, and therefore also a higher than average return, under different light conditions.