TITLE: Solar energy in the Netherlands

Payoff: using clean energy

Solar product 1: Victron MultiPlus 12/3000/120-16 230V VE.Bus

* Shop link : http://www.ikwilzonneenergie.nl/Victron-Energy-Multiplus-12V/3000W/120-16
* Product description : https://www.victronenergy.com/inverters-chargers/multiplus-12v-24v-48v-800va-3kva

Article : The MultiPlus

Parapgraph: The MultiPlus, is a combined inverter and charger with many features include a true sine wave inverter, adaptive charging, hybrid PowerAssist technology, plus multiple system integration features.

Header1 : Unique PowerAssist

Paragraph : Prevents overload of a limited AC source

Header2 : Uninterrupted AC power

Paragraph : When grid failure occurs the inverter within the Multi is activated and takes over the supply to the connected loads.

Header3 : Virtually unlimited power

Paragraph : Up to 6 Multis can operate in parallel to achieve higher power output.

Header4 : Remote Monitoring and Control

Paragraph : Coupled with a GX device you can monitor and control your Multi and system via the internet from anywhere.

Footer : More information

Solar product 2: Victron Smart inverter 12V 2000W 230V~

* Shop link : http://www.ikwilzonneenergie.nl/Victron-Energy-omvormer-smart-12V-2000W-230V
* Product description : https://www.victronenergy.com/inverters/phoenix-inverter-smart

Article : The Smart Inverter

Paragraph: The Phoenix Inverter Smart is an efficient and reliable inverter. It’s powerful enough to supply most common plug in appliances in your car, boat, caravan or home. A toroidal transformer provides a high peak power surge capacity, stable voltage, frequency and high quality sine-wave.  Bluetooth is built-in, and makes setting up your high power inverter easier than ever before.

Models are available in 1600VA, 2000VA and 3000VA for 12, 24 or 48V systems.

Footer : For more information click here

Solar product 3: SMA STP8.0 Solar panels inverter 3-phases

* Shop link : http://www.ikwilzonneenergie.nl/SMA-Omvormer-STP-80-3AV-40
* Product description : https://www.sma.de/en/products/solarinverters/sunny-tripower-80-100.html

Article : SMA STP8.0 Solar panels inverter 3-phases

Paragraph: The Sunny Tripower 8.0–10.0 combines top inverter performance with maximum ease and comfort for its users. With integrated services and shade solutions, it can meet any challenge found on roofs.

Header1 : Installation

Paragraph :

* One-person installation due to low weight of 20.5kg
* Compact design means minimum space requirements
* Intuitive commissioning and local monitoring via a smartphone or tablet

Header2 : Optimization of energy yield

Paragraph : Dynamic active power limitation means direct use of excess energy and less power from the grid.

Header3 : Investment Security

Paragraph :  When inverter fails, SMA proactively informs the PV system owner and the installer.

Footer : For more information click here

5 reasons to use solar power:

1. Solar has a fixed energy cost.
2. Solar Power Can Use Underutilized Land
3. Fulfill your social responsibility to reduce carbon emissions
4. Long-time warranty and low maintenance costs
5. Solar is Renewable and Clean Energy

How solar works

Solar panels:

A solar panel is used to convert light from the sun, which is composed of particles of energy called "[photons](http://chemwiki.ucdavis.edu/Physical_Chemistry/Quantum_Mechanics/02._Fundamental_Concepts_of_Quantum_Mechanics/Photons)", into electricity that can be used to power electrical loads. [Photovoltaic (PV) solar panels](https://us.sunpower.com/sites/default/files/media-library/white-papers/wp-understanding-different-types-solar-and-mounting-solutions.pdf) are made up of many solar cells. Solar cells are made of silicon, like semiconductors. They are constructed with a positive layer and a negative layer, which together create an electric field, just like in a battery. The more light that hits a cell, the more electricity it produces.

Charger controller:

A [solar charge controller](http://www.altestore.com/store/Charge-Controllers/Solar-Charge-Controllers/c892/) manages the power going into the battery bank from the solar array.  It ensures that the deep cycle batteries are not overcharged during the day, and that the power doesn’t run backwards to the solar panels overnight and drain the batteries. Some charge controllers are available with additional capabilities, like lighting and load control, but managing the power is its primary job. It should be noted that charge controllers only control DC loads. AC loads are to be controlled (and disconnected, if needed) by an inverter.

Battery system:

Solar batteries work by storing energy produced by solar panels for later use. The higher your battery's capacity, the more solar energy it can store. When you install a solar battery as part of your solar panel system, you are able to store excess solar electricity at your home instead of sending it back to the grid. If your solar panels are producing more electricity than you need, the excess energy goes towards charging the battery. Later, when your solar panels aren’t producing electricity, you can draw down the energy you stored earlier in your battery for night use.

DC Power:

Direct Current (DC) Power refers to the unidirectional flow of electrons and is the form of power that is most commonly produced by sources such as solar cells and batteries. In DC current, the electrons move from an area of negative charge to an area of positive charge without changing direction. Solar panels use the photons produced by sunlight to generate direct current (DC) electricity. When the photons hit the panel they are absorbed by the panel’s semiconducting silicon material. During this process electrons separate from the atoms and move around the solar cell.

Inverter:

The solar powered inverter is the electrical converter type that can convert the variable direct current (DC) power into the utility frequency usable alternating current (AC) power.In the absence of solar inverter, we can receive energy from the sun into the solar panel, but we cannot use that collected solar energy into our home appliances, electronics, and lightings.The solar inverter is an essential part of the whole solar PV system, and this is also the part most likely to have issues as they are located in different weather conditions such as humidity, extreme heat, and rain.

AC Power:

Alternating current (AC) is an electric current that periodically reverses its direction, in contrast to direct current (DC) which only flows in a single direction which cannot change sporadically. his is usually caused by a sinusoidally varying current and voltage that reverses directions, creating a periodic back and forth motion for the current. Despite this current flowing back and forth many times a second, the energy still essentially flows continuously from the power plant to the electronic devices.