SWISSWATT
NATURALLY ENERGY

THE COMPANY

Naturally Energy

Commitment

SWISSWATT offers components and systems for the sustainable and natural production of energy. From high efficient solar cells to complete solar systems we deliver customized solutions for our clients. Products range from monocristaline to polycristalline modules known as MONO-WATT
and POLYWATT. Besides these common modules we provide a all black series and laminates without backsheet for the seemless building integration (BIPV). BIPVs offer novel ways in designing green high tech systems matching the design requirements of tomorrows architecture.

SWISSWATT is a young venture founded by three individuals with different backgrounds shaping the PV-industry since 2002. The acting individuals are commited to a venture dedicated to fullfill the needs of both: Wholesale and end consumers who share the responsibilty for the planet of tomorrow generations. We do not intend to make everything different but a few things essentially better.

Against this background SWISSWATT offers the best qualities and service levels for competitive pricing. Choice of raw material, production technology and consequent quality control and performance testing demonstrates the corporate skills and consequently leads to an over industry average customer benefit:

+ Wattpeak tolerance is granted between 0 and +3%. Business objectives and calculations can be met, value for money is given. You get what you have ordered.
+ A minimum of 90% module efficency is guranteed two years over industry standard up to 12 years.
+ Arising claims are re-secured by an re-insurance venture over the guaranteed lifespan.
+ Advanced product details and options to customize to meet roof or building requirements make SWISSWATT to your choice for the next 25 years.

HERITAGE

As a Swiss venture we are dedicated to the local values:

Präzision
Everything we offer was planned or produced with the highest precision. Not only the raw materials or products but also our services and value creating processes are checked against our commitment on a daily basis. This for the highest efficiency of your energy generation and the return of your investment.

Highest quality
Our modules are tested regularly inhouse and by independent testing laboratories. Here we test against our competitors to document our position at the top. We produce under clean room conditions. This is the best fundament to maximize your output.

Exclusivity
Efficiency, product design of cells and connectors with multiple options to combine and customize will meet your individual requirements will truly comfort you over the 25 years. Not only the function and efficiency of your system is our core interest but the combination of form and function.

Reliability
Our products and services are designed for the highest reliability. This reliability is leveraged by automation, standardisation and advanced technical details. Details as the lamination of the capsulation, wiring and the quality of our high transmission low iron glass.

All this is covered and reinsured by extensive warranties.

THE PRODUCTION

SWISS WATT used Swiss manufacturing technology for the production of Monowatt and Polywatt modules. Unlike other manufacturers SWISS WATT has automated the critical production steps. In particular, the inclusion and placement, an interim test and the brazing processis controlled by machines with highest precision. These steps affect the durability, performance and efficiency of the modules, and are therefore the condition for the maximum yield and a maximum life span.

The recording takes place under vacuum, not to harm the thin and fragile structures of the cell. Before the brazing the cell will be preheated by an advanced temperature-controlled management system. Automatic brazing heads create a permanently stable connection without overloading the cells.

After the brazing of the cells, the compounds are visually and electronically verified. Cell lines are connected to modules, laminated and encapsulated. Primarily to improve the stability under wind and snow load, the frame is assembled. The finished modules are tested in the 6.5-meter-high flash tower and divided into performance categories. With this latest technology we test and document the performance of the final module. A Xenon flash, with a light spectrum, homogeneity and stability closest to the characteristics of the sun generates for the first time measurable and documentable energy.

The Precision of the production facilities and Test Facilities in a clean room environment, guaranties outstanding quality of our modules.

RESPONSIBILITY

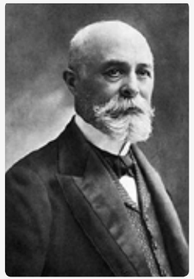
It is still debated whether climate change is caused by man or not. It is the time to discuss not only, but to act. Global Warming seems to be accelerated by CO2 emissions as a result of energy consumption. The energy consumption is not only induced by poopulation growth but also by the increasing energy intensity of living standard of the developing countries.

The sun supplies more energy in three hours than mankind can consume in 1 year. And it's free. The best part is that solar energy is clean. The operation of a photovoltaic system generates no exhaust or any other emissions.

Each fed KWp prevents the development of up to 7 to C02 and 0.2 ltr. water. The energy for the production of silicon, the basic building block of the cell reproduces itself in 3-7 years. In the planned lifetime of the module (assuming 25 years) the energy invested is recovered by 5-50 times.

+ Electricity from photovoltaic systems is the environmental friendly and silent possibility to generate energy.
+ Saving of scarce fossil fuels without carbon dioxide emission.
+ Independence from other natural resources.
+ Actively conserving energy leads also to a change of the mindset.
+ Improvement of the Quality of Life achived by an active contribution to environmental protection.
+ Active environmental protection combines with a guaranteed income.
+ Principle maintenance-free operation about the guaranteed lifetime.

TECHNICAL BACKGROUND



The basic principle of solar cell:

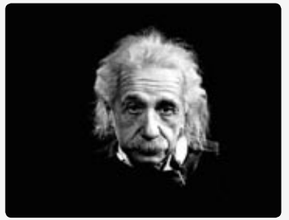
The photovoltaic effect was discovered by random by Edmond Becquerel in 1839. Also by coincidence the commercially relevant principle of the p-n transition was observed. Albert Einstein described the p-n transition at the ETH Zurich. For this he received the Nobel Prize in 1922. The photovoltaic effect is the basis for Einstein's quantum theory.

Between two silicon layers (p-layer boron-and phosphorus-layer n) come with a difference in the number of atoms. Solar light strikes the cell, which emits electrons from the n-layer into the positively charged p-layer. The released electrons move through the diode in the negatively charged n-layer. The free electrons are attracted by traces and derived as voltage.

The production of solar cells::

Solar cells are mainly consisting out of silicon. Silicon, the main component of sand, is the second frequent element, virtually unlimited available.

The silica sand is melted, purified and enriched with pure silicon. The addition of boron forms the p-layer in the silicon. After several melting and processing steps a monocrystalline silicon cell is created. Part of the cells are broken and re-melted at high temperatures to form a polycrystalline structure.



The crystals are cut into individual slices. After cleaning and polishing the n-layer (phosphorus) is applied.

PRODUCTS

Moduletyp	MW75 - MW90	MW160 - MW190 *	MW220 - MW255	PW120 - PW140
* SHADOW BLACK *Modules with 72 cells are also produced in a „Shadow Black“ version. With matt black base foil laminated, matt black powder coated frame, screw or clip attachment optional. Technical data and specifications shall also apply.*				
Nennleistung P_{MPP} (W)	75 - 90 Wp	160 - 190 Wp	220 - 255 Wp	120 - 140 Wp
Zellentyp, Grösse, Anzahl	Monocristal, 125 x 125, 36	Monocristal, 125 x 125, 72	Monocristal, 125 x 125, 96	Polycristal, 156 x 156, 36
Gewicht	8 kg	15,5 kg	25 kg	12 kg
Masse	1195 x 541 x 40	1580 x 808 x 40	1580 x 1069 x 45	1482 x 676 x 45
Zellen Effizienz (%)	14,00% - 16,80%	15,00% - 17,00%	15,40% - 17,80%	13,70% - 16,00%
Modul Effizienz (%)	11,60% - 13,92%	12,50% - 14,88%	13,00% - 15,10%	12,50% - 14,00%

PRODUCTS

Moduletyp	PW170 - PW185	PW185 - PW210	PW205 - PW235	PW250 - PW275 *
BIPV *BIPV modules are iembedded on both sides withi low-iron tempered Solar glass. Transparency for design roofs and facades. BIPV is worth twice: savings for building materials and extra return from the power supply. Power rating: 55W-115W / m2, mono or poly, frameless.*				
Nennleistung P_{MPP} (W)	170 - 185 Wp	185 - 210 Wp	205 - 235 Wp	250 - 275 Wp
Zellentyp, Grösse, Anzahl	Polycristal, 156 x 156, 48	Polycristal, 156 x 156, 54	Polycristal, 156 x 156, 60	Polycristal, 156 x 156, 72
Gewicht	15 kg	17 kg	22,50 kg	26 kg
Masse	1324 x 992 x 45	1482 x 992 x 45	1655 x 992 x 45	1956 x 992 x 45
Zellen Effizienz (%)	14,60% - 15,60%	14,10% - 16,00%	14,00% - 16,10%	14,27% - 15,70%
Modul Effizienz (%)	12,90% - 14,10%	12,60% - 14,30%	12,50% - 14,30%	12,90% - 14,20%

Additional technical information and datasheets for MONO- und POLYWATT modules are available on www.swiss-watt.com

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