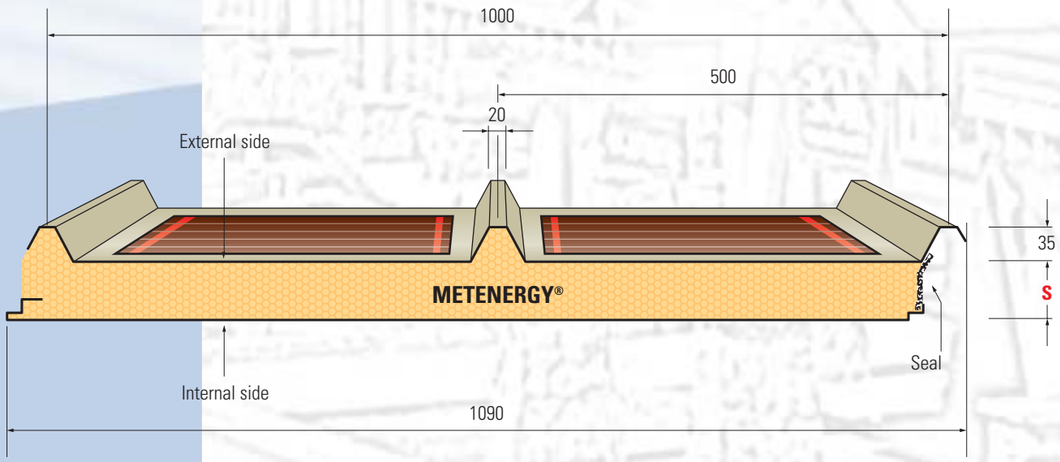
Metenergy®

Photovoltaic solar panel, slope p ≥ 7%

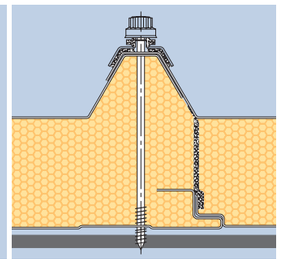
PRODUCED IN: ITALY

The METENERGY® insulating panel is a product that can be used as a roofing element and integrates, in the flat part between the U profiles, *UNI-SOLAR®* photovoltaic modules, available in two versions: PLV-64B and PVL-128B.
Such modules can be connected so as to yield the desired power and voltage values, a feature that makes METENERGY® a solar panel suited for multiple uses such as roofing, sun screening elements, heat and sound insulation, car ports and much more. It can be used for industrial sites, public buildings and sport facilities, as well as residential buildings or small home use.
In fact, photovoltaic energy is an alternative energy source whose purpose is to meet the energy demand of a given building exploiting an unlimited energy source, such as sunlight.
Moreover, photovoltaic systems are environmentally friendly, do not require any fuel, make any noise nor produce any waste of energy or heat emission or loss.
The minimum length of METENERGY® solar panels is 3,150-mm and they can be installed on any structural support in small or large units, depending on energy needs and location. The panels allow to exploit unused surfaces of buildings as well as save on covering materials for buildings.
The panels can be walked upon and are weather resistant (even to hail); thorough statistical inspections allow to safely guarantee them for 20 years. The METENERGY® panels are available in many colors and in 128 W_p, 256 W_p, 384 W_p and 512 W_p models.
For additional technical information, refer to the METENERGY® technical manual.



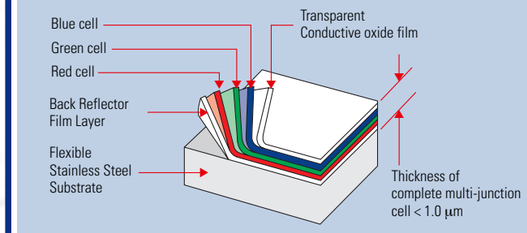
TÜV
Protection Class II
up to 1000 V
(TÜV Rheinland)

CE
IEC/CEI 61646
CEC701
(JRC-Ispra)



UNI-SOLAR® photovoltaic modules

UNI-SOLAR® products transform sunlight directly into electrical energy through an exclusive technology called "Triple Junction".
Each solar cell used in *UNI-SOLAR®* products is composed of three semiconductor junctions stacked on top of each other. Each cell absorbs a part of the solar spectrum, red light being absorbed by the bottom cell, yellow/green light by the middle one and blue light by the top cell. This spectrum splitting capability is the key to higher efficiencies and higher energy output, especially at lower irradiation levels and under diffuse light.



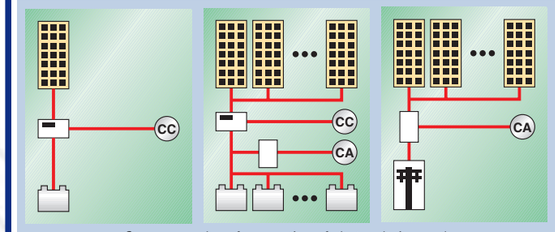
The photovoltaic generator

Several modules connected electrically in series make up a string. Several strings, normally connected in parallel to supply the required power, make up the photovoltaic generator. Therefore, from an electrical point of view, there are practically no limits to the production of power by photovoltaic systems as the parallel connection of several strings allows to obtain different levels of electrical power.
The passage of energy from the photovoltaic system to the final consumer or the public grid is carried out through additional equipment required to transform the DC-current produced into AC-current via an inverter, in order to adapt it to the final user's needs.

UNI-SOLAR® PV-Laminate	PVL-64B	PVL-128B
Rated power (Wp)	64	128
Operating voltage V_{MPP} (V)	16.5	33.0
Operating current I_{MPP} (A)	3.88	3.88
Open circuit voltage V_{OC} (V)	23.8	47.6
Short circuit current I_{SC} (A)	4.80	4.80

The conditioning system and power control

The transformation of the DC-current produced by the modules to AC-current takes place through an inverter equipped with a transformer with a re-phasing and filtering system, which ensures the quality of the output power.
The alternation of day/night, the cycle of the seasons and the variations in weather conditions contribute to an unsteady production of electrical energy by a photovoltaic system with respect to either the hours of the day or the months of the year.
This means that, in order to give the consumer complete independence, the installation must be connected to the national electricity distribution network or it is necessary to use electrical energy accumulation systems (e.g. batteries), which make electricity available when the sunlight is insufficient.



Some examples of connection of photovoltaic panels

Table of safe spans

Values guaranteed with external face in steel 0.8 mm thick, and internal face in steel 0.4 mm thick.
The spans ***l*** (m) as a function of a uniformly distributed overload **p** (daN/m²), have been obtained from load tests carried out in Metecno laboratories, and provide a deflection f ≤ ***l***/200 with a safety coefficient that complies with the UEAtc standards for insulated panels, which have been established and are implemented by primary European Certifying Organizations.

S mm	K Kcal/m²h °C	K Watt/m² °C	Panel weight kg/m² 0,8 + 0,4	p = (daN/m²)	p: 60	80	100	120	150	200	250	300	p: 60	80	100	120	150	200	250	300
30	0,50	0,58	11,81	***l*** =	5,00	4,34	3,85	3,49	3,21	2,77	2,63	2,10	4,46	3,85	3,37	3,07	2,89	2,52	2,30	2,10
40	0,39	0,46	12,19	***l*** =	5,30	4,64	4,16	3,73	3,52	3,02	2,83	2,63	4,76	4,16	3,73	3,37	3,15	2,71	2,56	2,23
50	0,32	0,38	12,57	***l*** =	5,60	4,88	4,34	3,98	3,71	3,21	3,02	2,76	5,06	4,34	3,85	3,55	3,33	2,89	2,63	2,37
60	0,28	0,33	12,95	***l*** =	5,96	5,12	4,64	4,22	3,90	3,40	3,15	2,96	5,30	4,58	4,16	3,73	3,46	3,02	2,83	2,56
80	0,22	0,25	13,71	***l*** =	6,56	5,60	5,06	4,64	4,40	3,71	3,55	3,22	5,84	5,00	4,64	4,22	3,84	3,40	3,15	2,83