



SOLAR CAR PORT

PENSILINA FOTOVOLTAICA

MODEL X-CON 2

Selected Solar Carport provides a parking space for two electric vehicles at once. Covering structure is fitted at least with 20 modules that provide up to 7400 watts, which largely exceeds the equivalent to the annual consumption of a 4-person household.

TECHNICAL SPECIFICATION

Number of vehicles	2
Application	Solar Carport
Design life	20 years
Wind load	Max 0.68 kN/m ²
Snow load	Max 0.69 kN/ m ²
Sismic	Complied
Roof type	PV – 15 degrees tilt inclination
Foundation type	Cast-in-place (recommended)
Inverter (kW)	6 / 9 (*)
PV System (kWp min/max)	5.92 / 7.4
Wallbox (kW)	7 / 11 (*)
Storage capability (kWh)	5 / 10 (*) / 15 (*)

(*) optional



SOLAR CARPORT KIT
Nr.2 BOXES
4 X 0.6 X 0.6 mt
1.7 x 1.2 x 1.2 mt



850 Kg
Kit
TOTAL
WEIGHT



SOLAR CARPORT
5kW
20 PV modules

OPERATION PHILOSOPHY

Mode – GRID CONNECTED (GC)

System is directly connected to the grid.

Suitable to be installed for plant which power exceeds 200kWp.

Mode – STAND ALONE (SA)

Island mode.

Energy storage operation whenever an energy overproduction is detected.

Energy Battery System (EBS) to be implemented (quoted as option).

Mode – STORAGE AND METERING (SM)

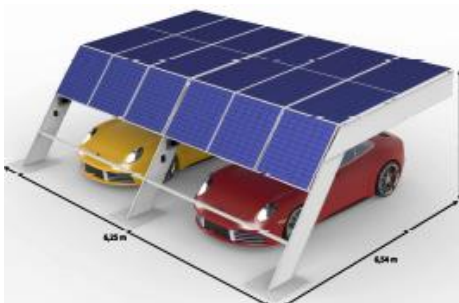
“Smart” system running mode.

Independent energy management system based on weather forecast.

Hybrid inverter (**included in our base scope of supply**) and integrated Energy Metering System.

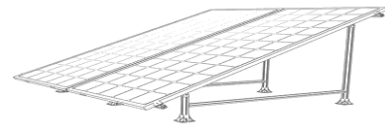
Off-grid System mode.

OVERALL DIMENSIONS



Overall dimensions	6,25 x 6,54 x 3,60 m
Surface (total)	42 sqm
Net Height (H)	3,00 m
Pillar step	2.70 m

STRUCTURE / MATERIALS / COLOR SHADE



Material selected has high corrosion resistance guaranteeing maximum and optimal service life and can be fully recycled.

Provision of supporting structure mainly composed by longerons, beams and metallic base-plate, bolted to provide robust profile.

The supporting structure is made of:



extruded aluminium profiles to EN AW-6060 (AlMgSi 0.5) – EN AW6063 (AlMgSi1).

Dimensional tolerances according to EN12020-1.

Chemical composition

Alloy	Cu	Fe	Mn	Mg	Si	Zn	Cr	Ti
6060	0.10	0.1-0.3	0.10	0.35-0.6	0.3-0.6	0.15	0.05	0.10
6063	0.10	0.35	0.10	0.45-0.9	0.2-0.6	0.10	0.10	0.10

Mechanical strenght

Alloy	Max Stress (N/mm2)	Yeld Stress (N/mm2)	Extension (A%)	Handness (HB)
6060	215	160	12	70
6063	245	200	9	80



carbon steel S235JR profiles to EN 10025-1/2.

Typically used for large Solar Carport.

Fastening elements, bolts and screws made of high spec durable steel 1.4301.

Clamping,joint and supporting accessories made of galvanized steel (stainless steel AISI316 upon request)

Gripping accessories made of black polyamide.

Color shade

Powder coated

Structure

Covering



RAL 7004



RAL 6005



RAL 5021



RAL 9003



RAL 3005



RAL 8017

FOUNDATION (at client care)



Cast-in-place concrete foundation
Properly designed for small Solar Carport

Key Features:

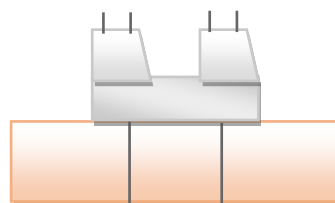
- Central foundation
- Car impact protection



Micro-pile foundation
Properly designed for large Solar Carport

Key features:

- Compact pre-cast concrete foundation
- Micro-pile anchoring system
- Ranging from 250kW PV thin-film modules
- Ranging from 350kW PV crystalline module



HYBRID INVERTER



Type	Master/Slave or String type (IEC 60146, UL 1741/IEEE 1547 or equivalent)
Output	Sinewave to EN 50081/EN 60555/EN50178
High Efficiency (AC)	>90% @ P/Pn(AC)=10%
Nominal Power (Pn)	5kW
Nominal Frequency (Fn)	50Hz
Output Voltage (Vout)	-8%Vn ≤ Vout ≤ +4%Vn
IP enclosure rate	IP54

The inverter maintains the nominal frequency of 50 cycles per second (Hz) to within ±1% of such frequency.

The inverter limits DC injection onto the AC signal to less than 20 mV.

The inverter ensures that the harmonic content of the supplied current does not exceed the maximum possible harmonic current as per BS EN 61000-3-2 Class A.

Other characteristics and equipment:

- Protection against overcurrent and overvoltage;
- Indications of status of operation (LED);
- capability of connecting monitoring devices;
- AC and DC disconnect switches;
- Security measures (EN 61000, EN 60950 and others);

AC/DC PANEL

Type	AC, 32A
IP grade	IP65
Overall dimensions (mm)	310 x 250 x 150
DIN modules	12
Voltage (VAC)	230

The panel is fitted with:

- 1-off switchgear 1P+N, 32A, 6kA
- 1-off Overvoltage discharge AC type 2, 1p+N, 275V, Ipeak 40kA
- 1-off Circuit breaker, 2 poles, C curve, 32A, 6kA
- Number of FS17 cables, 6mm².

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE)



EVSE is Level 2 chargers, 230 Vac, dual chargers (double outlet) with IEC 62196 Type 2 connectors, 7kW power, 32A.

Equipment

Display or lights indicating charging status.

Grounding system.

Outdoor IP rating: IP54.



Optional: remote monitoring system.

PV MODULES



High spec and efficiency PV modules, 370 Wp each.

The modules meet or exceed current typical industry standards of performance for 20 years or more.

All PV modules are listed to Underwriter's Laboratories (UL) Standard 1703 Standard for Safety for Flat-Plate Photovoltaic Modules. PV modules from a Tier 1 supplier meeting international standards.

The solar PV modules are inspected and surveyed for manufacturing flaws, damage and corrosion prior to installation.

Each PV module frame is made of corrosion resistant material electrically compatible with the structural material used for mounting the modules.

ELECTRICAL COMPONENTS / CABLES

Variable cable routing (cable duct fixed to any place with up to 3 clamps).

Cable Trays, Wire Trunking, Basket Trays, Cable Ladders, etc are used as required to secure all wiring.

All exposed wire management components including zip ties are UV resistant. Transition boxes are installed at the end of each source circuit to transition from exterior wire on panels to conduit.

Junction boxes have hinged, weatherproof lids with captive screws and cable gland entry points.

This switch is clearly labelled, lockable and fully accessible to technicians.

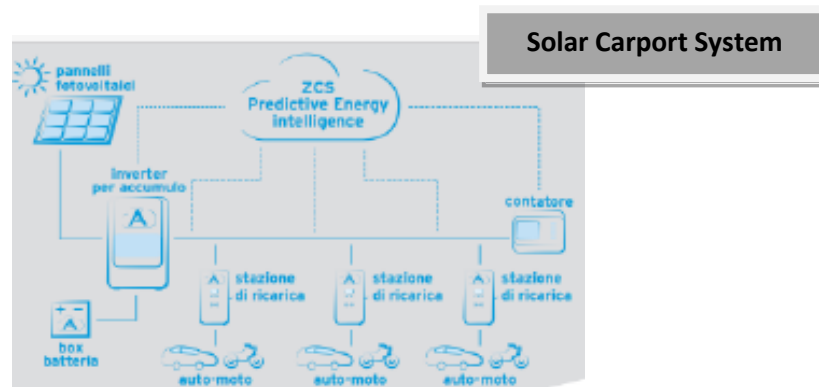
Note: The Respondent shall liaise with National Utility Regulation Commission for grid interconnection requirements.

Exposed cables should show an adequate type design to withstand harsh weather conditions (UV radiation, salt air, humidity etc.), e.g. type HN07-RNF.

LITERATURE / DESIGN CALCULATION

- Design calculation with load assumptions according to EN 1990 (Eurocode 0), EN 1991 (Eurocode 1), EN 1993 (Eurocode 3), EN 1999 (Eurocode 9);
- Two hard copies each of system information sheets, designer and installer information sheets;
- System and equipment O&M manuals;
- Electrical line diagrams and mounting structure installation drawings.

DIAGRAM



OPTIONAL (quoted upon request)



LED DISPLAY (advertising purpose)

For the purpose of showing existence of the installation and raising public attention and awareness on the technology, each installation could be complemented with an electronic LED display board.

This display board will be connected to the PV system and should show the following characteristics:

- Instantaneous power production in kW;
- Daily, Monthly, and Total Accumulated energy production in kWh;
- Avoided CO2 emissions in kg;
- General advertising.



ENERGY BATTERY SYSTEM (EBS)

Provision of energy battery system designed to provide from 5 to 90kWh.



RECOMMENDATION FOR INSTALLATION

Solar carport shall be tilted for energy performance with minimum of 5 degrees to allow for drainage by reducing soil build-up.

Lighting shall be provided under each carport. This lighting shall be LED and allow for adjustable times for illumination with photocell controls to turn the lights on at dusk and off in the morning prior to daylight.

EXCLUSION / DEVIATION TO PROJECT SPECIFICATION

- Delivery of Solar Carport Kit;
- Different RAL not specifically mentioned;
- Provision of foundation for structure anchoring;
- Provision of pre-cast concrete;
- Data logger / smart connection module;
- Installation of free issued equipment necessary for proper system grounding (inverters, modules, racking, combiner boxes, and EV charging infrastructure);
- Provision and installation of lightning discharge system;
- Mounting of complete Solar Carport;
- Complete module assembly;
- Wind load vibration simulation (to be quoted upon request);
- Earthquake simulation (to be quoted upon request);
- Any material, equipment or services not specifically mentioned.

TAILORED SERVICES

Following key services are provided:

- Dedicated support for client's project planning;
- Documentation of system integration;
- Supply of complete Solar Carport through assembly kit.

REFERENCES



Solar Carport size : 400 kWp
Application : carpark
Project : Piedmont mall
Country of installation : Italy

Foundation type : Micro-pile
Configuration : 2-row vehicle arrangement
Installation : at client care

NEXT: YOUR PROJECT

Solar Carport size : -----
Application : -----
Project : -----
Country of installation : -----

Foundation type : -----
Configuration : -----
Installation : -----



SCOPE OF SUPPLY (SOW)		
	Included	Excluded
MAJOR EQUIPMENT		
Solar CARPORT structure made of extruded aluminium profiles	<input checked="" type="checkbox"/>	
Solar CARPORT structure made of durable carbon steel profiles		<input checked="" type="checkbox"/>
Metallic Structure RAL 7004	<input checked="" type="checkbox"/>	
Foundation		<input checked="" type="checkbox"/>
EVSE	<input checked="" type="checkbox"/>	
Inverter	<input checked="" type="checkbox"/>	
PV Modules	<input checked="" type="checkbox"/>	
Electrical components	<input checked="" type="checkbox"/>	
TESTING / INSTALLATION		
Any site installation works		<input checked="" type="checkbox"/>
Commissioning on site		<input checked="" type="checkbox"/>
Site Acceptance Test (SAT)		<input checked="" type="checkbox"/>
OPTIONALS		
LED Display		<input checked="" type="checkbox"/>
Energy Battery System (EBS)		<input checked="" type="checkbox"/>
PACKING AND SHIPPING		
Packing	<input checked="" type="checkbox"/>	
Shipping		<input checked="" type="checkbox"/>
VAT		<input checked="" type="checkbox"/>
Import / Export Duties		<input checked="" type="checkbox"/>

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