

## PHOTOVOLTAIC SYSTEMS

### PHOTOVOLTAIC SYSTEMS APPLICATIONS

Photovoltaic systems are ideal for applications requiring an energy supply independently from the public utility grid, as well as complementing that one. This kind of resorts, are used to supply electricity in locations where the access becomes difficult for the utility grid or in areas where there is a lack of electric supply.

#### - Home and public electric supply:

- Regular or temporal houses.
- Public lighting by means of autonomous lampposts.
- Rural tourism resorts.

#### - Agricultural, cattle breed and industrial applications:

- Pumping up water, watering systems.
- Desalination and water purifying.
- Farms, greenhouses and workshops lighting
- Milking systems
- Ice- making, refrigeration.

#### - Telecommunications, maritime marking, etc.

- Telecommunications: TV, radio and telephony repeaters.
- Maritime and terrestrial marking .
- Alarm devices.

#### - Various:

- Road and railway signals
- Water oxygenation
- Cathodic protection of gas pipelines
- Spatial applications
- Hydrogen production
- Electrical vehicles power supply

The photovoltaic solar panels can be integrated into a mixed plant, equipped with mini aeolic turbines or diesel groups to get a better performance and security for the supply. If the energetic demand increases over the initial foresight, the generative and accumulative capacity would be easily extensible.

This kind of resorts can be directly attended by its owners since the required maintenance effort is quite simple.

Prior to considering both the acquisition and installation of one of these generation systems, it is fundamental to analyze the energetic demands and the solar energy potential available in the location.

ACSA's wide experience in this area, offers an analytic resort service for those clients requiring it.

## EVALUATIVE PROCEDURES

### ■ Evaluation of the solar potential of the location:

The energetic potential will depend on the insulation capacity of the place. It is recommended to carry out the appropriate measures to understand its specific characteristics.

Usually, a superficial knowledge of the insulation potential is required in small resorts.

### ■ Energetic Demand of the location.

In order to obtain the best benefit from the energy produced in the sunny hours, using it during the night or in cloudy days, it is necessary to arrange an appropriate energy storage. The most extended and recommended systems of accumulation are the electric accumulators or batteries.

User must evaluate his energetic necessities beforehand in order to measure correctly the storage capacity of the batteries. For this purpose, it is also necessary to know both the top and the average power required; that is, it is necessary to take into account which devices are fed with electric energy from the batteries, whether they work simultaneously, and the usage time table. If we multiply the power of each device by the operative time, we will obtain the daily energetic consumption.

The generation system based on Photovoltaic Solar Panels, if installed in a location with enough insulation, is capable of continuously supply electricity for a house, an industry or several other usages but only if the appropriate additional systems are used. It may satisfy the night or cloudy days periods to a bigger or lesser extent, depending always on both the energetic consumption of that period and the existing accumulative capacity of the batteries. However, in order to optimize the installation, we should avoid the use of household appliances requiring an excessive consumption of energy such as electric stoves or thermostats.

## SYSTEM DESCRIPTION

A photovoltaic system is a conjoint of elements that enables the supply of electric energy in order to satisfy the required needs out of the solar energy. The system is constituted by:

- **Energetic absorption system:** made of photovoltaic modules that transform solar radiation into electric energy.

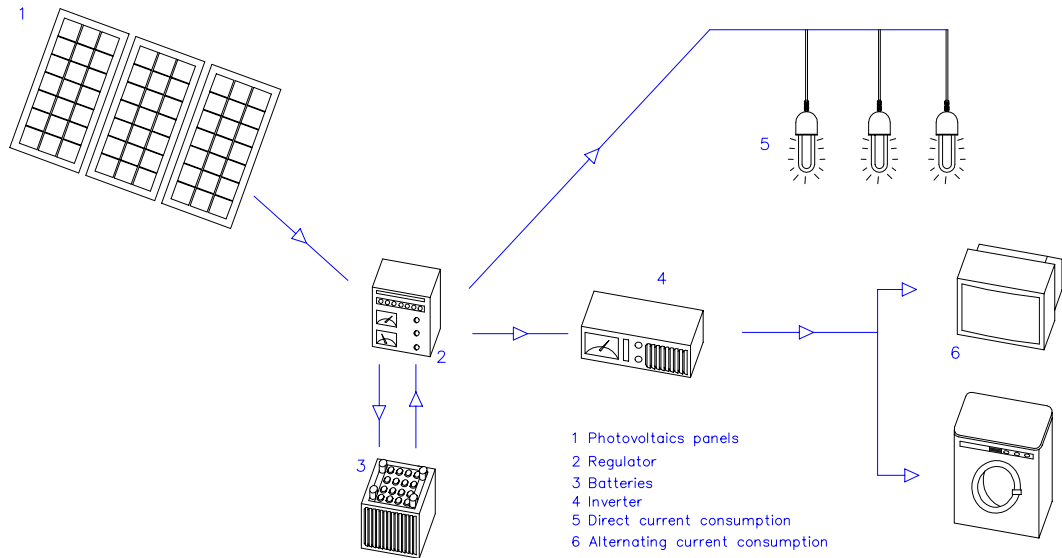
- **Storage system:** made of several batteries that keep the electric energy generated during the radiation hours in order to be used during low or null insulation periods. It is very important to properly dimension this system to obtain the electric energy supply adapted to each specific resort necessities.

- **Regulator system:** a system of charge regulation should be installed in the joint of the solar panels and the battery for a perfect functioning of the resort; this avoids a continued battery charging from the solar collector once it has already reached its maximum charge.

- **Current adapter system:** its function is to adequate the characteristics of the generated energy to those demanded by the resort usages. The electronic switching system, called reverser, turns the continuous current of the batteries into alternate current.

## INSTALLATION SCHEME

This is the installation scheme:



## TECHNICAL FEATURES

MODEL	CHARACTERISTICS		DIMENSIONS	
A 130	Nominal peak Power ( Pmax)	130 Wp	Length	1375 mm
	Voltage Maximum Power (Vmp)	30 V	Width	815 mm
	Intensity Maximum Power (Imp)	4.3 A	Glass thickness	45 mm
	Intensity of short circuit (Isc)	4.8 A	Weight	13 Kg
	Voltage of open circuit (Voc)	36 V		
A 85	Nominal peak Power ( Pmax)	85 Wp	Length	1180 mm
	Voltage Maximum Power (Vmp)	18 V	Width	530 mm
	Intensity Maximum Power (Imp)	4.7 A	Glass thickness	43.5 mm
	Intensity of short circuit (Isc)	5.0 A	Weight	7.5Kg
	Voltage of open circuit (Voc)	22 V		
A 75	Nominal peak Power ( Pmax)	75 Wp	Length	1188 mm
	Voltage Maximum Power (Vmp)	17 V	Width	530 mm
	Intensity Maximum Power (Imp)	4.4 A	Glass thickness	43.5 mm
	Intensity of short circuit (Isc)	4.7 A	Weight	7.5 Kg
	Voltage of open circuit (Voc)	21.4 V		
A 55	Nominal peak Power ( Pmax)	55 Wp	Length	825 mm
	Voltage Maximum Power (Vmp)	18 V	Width	530 mm
	Intensity Maximum Power (Imp)	3.05 A	Glass thickness	43.5 mm
	Intensity of short circuit (Isc)	3.26 A	Weight	5.06 Kg
	Voltage of open circuit (Voc)	22 V		
A 30	Nominal peak Power ( Pmax)	30 Wp	Length	958 mm
	Voltage Maximum Power (Vmp)	17 V	Width	433 mm
	Intensity Maximum Power (Imp)	1.76 A	Glass thickness	38.5 mm
	Intensity of short circuit (Isc)	1.90 A	Weight	5.5 Kg
	Voltage of open circuit (Voc)	21.20V		
A 10	Nominal peak Power ( Pmax)	10 Wp	Length	561 mm
	Voltage Maximum Power (Vmp)	17 V	Width	231 mm
	Intensity Maximum Power (Imp)	0.59 A	Glass thickness	38.5 mm
	Intensity of short circuit (Isc)	0.62 A	Weight	1.6 Kg
	Voltage of open circuit (Voc)	21.2 V		

Others models are available. All the technical specifications are subjected to changes without notification by the manufacturer.

MAY - 2003