



Ground mounted solar power plant

Features of the plant:

The PV power plant consists of 320 modules, forming 5 plates: 1 plate of 28 modules, 1 plate of 52 modules and 3 plates of 80 modules, all with inclination of 25°. The generated electricity is fed to 4 inverters and to each inverter are connected 5 strings, consisting of 16 serially-connected modules.

For the current project are selected SMA Technologies inverters, model Sunny Tripower STP 17 000TL. These are 3-phase inverters with two MPP trackers and inputs for up to 4 strings for MPP tracker A and 1 for MPP tracker B. The successive connection of the modules in string is carried out by installed factory cables with standard Tyco connectors. Both end modules of each string with DC cable RADOX Solarcable single core 1x4 mm² are connected to the relevant input of the inverter.

The inverters are without transformers and with much higher efficiency compared to the inverters with transformers. They have IP65 level of protection against external weather conditions. The mutual distances between the inverters, as well as between inverters and external objects are designed according to the requirements of the manufacturer SMA Technologies. They are grouped in the main switchboard via a CBT-c 4x10mm² cable. The main switchboard is connected via a CABT 3x95+50mm² cable with CCTS low voltage switchboard. For main fuse of the main switchboard is provided automatic circuit breaker NM1-225S, 3P, 125 A. The main switchboard and the inverters are installed on the north side of the construction.

The central monitoring and control device is Sunny Web Box, with RS485 interface for connection to the inverters and to Sunny Sensor Box.

The earthing system is built from a common grounding circuit, composed of galvanized steel bar 40/4mm, laid in the ground to a depth of 0.6m. Galvanized steel poles 50x50x5 mm, L=1500 mm are mounted and connected to the bar. The connection of the grounding circuit with the structures is carried out using "U"-shaped bracket, which serves as a connection of the bar, structures and the aluminum supporting panel profiles. Subject of grounding are all elements of the power plant structure, all inverters and metal panels, as well as all metal non-current-carrying parts.

The lightning protection system is provided with a broader range than necessary due to the fact that there are power plants of this type installed in the neighboring properties. With the selected broader range, they fall within the protection zone of the lightning conductor, which relieves the lightning protection of the adjacent power plants. The need for imposing this decision is that during the implementation of the PV power plant project, its lightning shaft will introduce significant shading in the investor property, which will generate electricity losses. Thus reducing the number of lightning conductors and shading respectively in the adjacent properties.

Power Plant Specification

Size:	60.8 DC
Commissioned:	June 2011
Type:	Ground mounted
Site Area:	1133 m ²
Output:	60 kW
CO ₂ Displacement:	~52.4 metric tons per year
Module Surface Area:	408.5 m ²
Modules Used:	Type: SPV 190M-24
	Quantity: 320
Angles:	Mounting Tilt: 25°
	Azimuth: -1°



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