



Ground mounted solar power plant

Features of the plant:

For the implementation of this project were used mono-crystalline Sinski PV SPV 190M-24 modules with nominal power of 190 Wp and voltage of VMPP=36.5V. Given the site geographic location and the higher summer temperatures in this region were chosen mono-crystalline modules, which have better temperature coefficient compared to the poly-crystalline.

The entire power plant consists of 432 modules divided into 9 groups. Each group consists of 48 modules divided into 4 strings of 12 modules. The successive connection of the modules in string is carried out by installed factory cables with standard MC3 connectors. Both end modules of each string with DC cable IBC Flexy Sun Sun 1x6mm² type are connected to the inverter input. The cable is for outdoor, mobile or fixed installation and resistant to weather conditions, high and low temperatures and UV radiation.

The border between the AC and DC section are the inverters. For the site were chosen inverters Aurora Power One PVI-12.5-OUTD-FS. The installation of the inverters is next to the strings, mounted to them, and the mutual distances, and distances between the inverters and the external objects are designed according to the requirements of the manufacturer SMA.

From each inverter exits a CBT-c 2x16.0mm² cable and goes to a properly sized circuit breaker into intermediate switchboard. The intermediate switchboards are three and to each of them are connected 3 inverters. From Intermediate switchboard 1, Intermediate switchboard 2, Intermediate switchboard 3 exits a CBT 3x35+16,0mm² cable and goes to a properly sized circuit breaker into main switchboard. The main switchboard powers also a warning light voltmeters, ammeters, outlet and UPS and is installed in a complete transformer post.

The grounding of the PV module frames is guaranteed by their electrical connection with the supporting aluminum profiles. The connection between the supporting aluminum profiles and the metal structure is carried out with bolts. For earthing devices are used galvanized pipes 2" with length of 2m. All earthing devices are connected with each other in a closed circuit of galvanized 40/4 mm bar, laid at a depth of 0.4m underground. The metal noncurrent-carrying parts are welded to the grounding circuit.

The lightning protection system consists of an early streamer emission lightning conductor ESES-A1 and lightning shaft height of 3m above the ground. The installation of the lightning shaft is at a safe distance from the solar modules and there is no shading.

The PV power plant consists of Sunny Web Box monitoring and control device, powered through UPS.

Power Plant Specification

Size:	82.08 DC
Commissioned:	June 2009
Type:	Ground mounted
Site Area:	3005 m ²
Output:	75 kW
CO ₂ Displacement:	~ metric tons per year
Module Surface Area:	551.5 m ²
Modules Used:	Type: SPV 190M-24
	Quantity: 432
Angles:	Mounting Tilt: 32°
	Azimuth: 5°



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