



Single structure solar power plant

Features of the plant:

For the implementation of this project were used mono-crystalline modules Sinski PV SPV 195M-24 with nominal power of 195 Wp and module voltage of VMPP = 36.8V. The land on which the power plant is built is in the shape of an irregular trapezoid, which requires the necessary 144 modules to be separated into three plates: bottom plate – 6 rows of 10 modules, middle plate – 6 rows of 8 modules and top plate – 6 rows of 6 modules per row. The modules are located on a structure with a minimum height of 3 m., inclination of 12° and azimuth of 36°. They feed the generated electricity to 3 inverters Sunny Mini Central SMC 8000TL, and to each inverter are connected 4 strings, consisting of 12 serially-connected 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 1 x 4 mm² type are connected to the inverter input through fast-acting fuses RS 1-15/10A, installed in a separate switchboard. The cable is for outdoor, mobile or fixed installation and resistant to weather conditions, high and low temperatures and UV radiation.

From each inverter exits a 2 x 16 mm² CBT-c cable and goes to a properly sized circuit breaker into a main switchboard. The electricity distribution companies provide for a possibility for disconnection in case of loss of power supply network. For this purpose, in the main switchboard are installed contactors NC1 50 11 for disconnection of PVPP from the power supply network. The contactor control is implemented by a network monitoring controller, which disconnects the contactor in case of change in some network parameters outside the set limits.

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 is completed with galvanized 30/3mm bar. The grounding of inverters, main switchboards and all metal non-current-carrying parts is carried out by welding to the grounding circuit, attached to the vertical downconductors.

Downconductors in turn are connected to earthing devices, combined in a common circuit through a galvanized bar 40/4.

The lightning protection system consists of an early streamer emission lightning conductor Schirtec – A SE. and lightning shaft height of 11.00 m.

Power plant monitoring and control is implemented by Sunny Web Box device, powered through UPS.

Power Plant Specification

Size:	28.08 DC
Commissioned:	August 2012
Type:	Single structure
Site Area:	515 m ²
Output:	24 kW
CO ₂ Displacement:	~21.9 metric tons per year
Module Surface Area:	184 m ²
Modules Used:	Type: SPV 195m-24
	Quantity: 144
Angles:	Mounting Tilt: 12°
	Azimuth: 36°



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