Don Bosco
Solar Training Center

Solar Installation

Lagos / Nigeria. March, 2019

Installation Description

The 20 solar modules are connected in 4 strings with 5 modules in series. The maximum Voltage per module is 43.2V which gives a maximum voltage (STC) of 5 x 43.2V = 216V. Since the temperature in Lagos is never below 25°C (STC), the maximum Voltage will be always less than the allowed 250V of the charge controller. The maximum charge current to the batteries will be 6,800Wp / 48V = 142A. Since we have a high irradiation in Lagos (at least if the smog is not too strong), we can expect 1.3 x 142A = 185A. The batteries should be charged with maximum C10 of the capacity at C20 (925Ah) which gives us 92.5A. Therefore the maximum charge current of the batteries is too high and has to be programmed at the MPPT Charge Controller accordingly to 46A each. Originally we had planned a higher battery capacity and then the modules would have matched perfectly. But because of limited financial resources we cut the size of the batteries. The solar modules strings are protected with surge protectors and can be switched off by a PV insulator. The power to the load is provided by a 48V / 5000VA Victron MultiPlus inverter / charger. In case the batteries are in a stage of low charge and there is not enough sun shine (clouds and rain), the batteries can be charged by the grid via the MultiPlus charger.

- The weak construction of the roof, which had to be first reinforced before we could install the modules on the roof.
- The limited financial resources to buy the needed size of the battery bank.

Facts

Location
SDB Delegate House in Iju / Lagos in Nigeria, at the 1st Floor.

Installation Date

March, 2019

End Users
Delegate House of the Salesians of Don Bosco, Nigeria Delegation.

Technical Data
- Solar modules, 144 half cells, 340Wp each, 20pcs; Total 6.8kWp
- Inverter / charger, Victron MultiPlus 48V / 5000VA, 1 pcs
- Charge Controller, Victron MPPT 250V /100A, 2 pcs
- Batteries: 6V / 1200Ah@C 100, 8pcs, Trojan, 57.6kWh
- GX Color Control
- Battery monitor BM700

Don Bosco Solar

DON BOSCO
Jugendhilfe Weltweit