

Solar PV System for Automatic Guideway Transit (AGT) System in BPSU Main Campus

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Abstract : This study focuses on exploring the possibility of using solar PV as an alternative for generating electricity to electrify the AGT System installed in BPSU Main Campus instead of using the power grid. The output of this study gives BPSU the option to invest on solar PV system to pro-actively respond to one of UN's Sustainable Development Goals of having reliable, sustainable and modern energy sources to reduce energy pollution and climate change impact in the long run. Thus, this study covers the technical as well as the financial studies, which BPSU can also be used to outsource funding from different government agencies. For this study, the electrical design and requirements of the on-going DOST AGT system project are carefully considered. In the proposed design, the AGT station has installed with a rechargeable battery system where the energy harnessed by the solar PV panels installed on the rooftop of the station/NCEA building shall be directed to. The solar energy is then directly supplied to the electric double-layer capacitors (EDLC's) batteries and thus transmitted to other types of equipment in need. When the AGT is not in use, the harnessed energy may be used by NCEA building, thus, lessening the energy consumption of the building from the grid. The use of solar PV system with EDLC is compared with the use of an electric grid for the purpose of electrifying the AGT or the NCEA building (when AGT is not in use). This is to figure how much solar energy are accumulated by the solar PV to accommodate the need for coaches' motors, lighting, air-conditioning units, door sensor, panel display, etc. The proposed PV Solar design, as well as the data regarding the charging and discharging of batteries and the power consumption of all AGT components, are simulated for optimization, analysis and validation through the use of PVSyst software.

Keywords : AGT, Solar PV, railway, EDLC

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