A Transportable Solar Power Generator

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***Abstract*—This paper presents the design of a 2kW portable photovoltaic (PV) stand-alone facility (PV generator) that converts directly solar irradiance into electricity for immediate use or storage. The project aims to build a stand-alone solar power source for use in rural villages, mountainous and remote areas that are distant from the national grid. It can also be very useful for powering camping tents, fishing boats, small farms, and greenhouses. Equally, it could be used for disaster stricken areas and during power outages. However, the proposed generator will be more suited for camping trips that Emiratis take almost in weekly basis. The paper will focus on presenting the main features of the designed prototype. It will also investigate the performance of the proposed stand-alone PV generator. Parameters investigated include geographic location, climate condition, solar irradiance, load consumption, ambient temperature, array voltage, battery voltage, and energy output from the array. The work presented is based entirely on the work carried out by final year electrical engineering students, during their capstone design project. The project work, presented, is a manifestation of the students learning during earlier semesters. It puts into practice the application of solar energy technology, that the student learned in his course on renewable energy systems.**

***Index Terms*—Solar energy, transportable solar system, stand-alone system, PV, photovoltaic system.**