

On-grid solar photovoltaic system: components, design considerations, and case study

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ABSTRACT

This paper involves the study on various components of grid connected PV system, and their operation, along with the design considerations to be followed during the installation. A case study on the '95 kWp on-grid photovoltaic system' commissioned at one of the education institute named Karunya Institute of Technology and Sciences in Coimbatore is illustrated. Study on the on-grid PV system consists of 95 kWp PV array comprising of 312 PV modules, four 25 kVA inverters. Results includes the online monitored data on power generation in kWh/kWp, energy saved in MWh, and CO₂ emissions avoided. Along with this, simulated energy performance of PV system is also illustrated. Promotion of solar PV plants in the educational institutes would help in reducing their energy consumption bills and helpful in carrying out research activities.

KEYWORDS:

Solar energy; Photovoltaic system; On-grid solar photovotlaic system; PV system components; 95 kWp solar plant in Karunya; PV design considerations.