

INDUS UNIVERSITY 120 Kw PV Solar Energy Storage System

Indus University Management decided to use Non Polluting Energy in one of their buildings by using Renewable Energy. As insolation of Solar Energy is high in the region where the Campus was located, Indus selected PV Solar Panels to meet part of the energy requirement.

A Solar PV Power Plant, by design, functions automatically without supervision. The Inverters “wake-up” in the morning and start energy generation when minimum DC voltage levels are reached. The Solar generation stops in the evening when the module string voltage goes below the minimum DC voltage level. An Off grid Inverter with Grid Export facility was selected. During night-time, the Inverter would supply Energy to the load through Battery Bank or grid without interruption of power.

During daytime, solar power is fed first to the load and balance energy is drawn from the battery and/or grid. The Load connected through inverter output is uninterruptable and priority of power will be SOLAR, BATTERY and GRID. The Inverters may shut down temporarily during daytime also due to disturbance in grid voltage and frequency or in case of drop in radiation due to cloud cover that occurs during the monsoon season.

As Day Time Consumption of the one Building is around 300-400 kWh and Night Time (Off Solar) Consumption is around 100-120 kWh, hence a 120 kWp PV Solar Power Plant and 240V, 240 kWh Battery Bank was selected. The battery bank consisted of 9 strings in parallel, each string made up of 20 series connected “Oasis” G31 12V, 116Ah Batteries. This Battery Bank has been operating satisfactorily at 50 to 60% DOD without any power interruption since March 2014. The batteries have been operated in PSOC by limiting the Charging Voltage to 13.25V per Battery. The Battery Bank is taken to Full SOC once in a month to reduce Water Loss and no drop in kWh Capacity of the Battery Bank has been observed. PSOC Operation of the Batteries also maximizes Charging Efficiency.

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