In the paper, analysis and a comparative study of exergetic performance has been made for amorphous silicon and cadmium telluride solar PV array in Oued N'echou at Ghardaia, Algeria (32°36′2.43″N of latitude; 3°42′6.32″E of longitude). The experimental data of solar radiation, ambient temperature, wind speed, module temperature, DC power (of the inverter of 96kWac) were measured and recorded for a typical day of December (21 December 2015) to evaluate the exergy and energy conversion efficiency. Applying the first law of thermodynamic and the second law of thermodynamic, the energy and exergy analyses for both PV arrays have been carried out. Exergy efficiency of amorphous PV array varied from 4.84% to 6.90% and varied from 6.25% to 10.85% for cadmium telluride during the day. The energy conversion efficiency curve of both PV arrays were found to be below that of exergy efficiency