Case Study 5 - Ground Mount, India (0.5% Shading Loss) Case Study 5 - Ground Mount, India, 18.5814680, 73.95

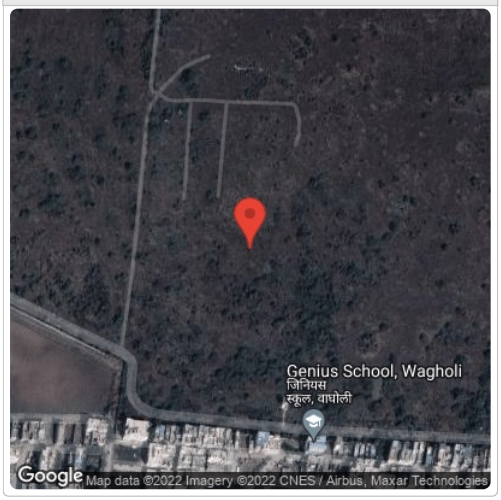
Report

Project Name	Case Study 5 - Ground Mount, India
Project Address	18.5814680, 73.95
Prepared By	Bhanu Swaroop Gaddam gaddambhanu9@gmail.com

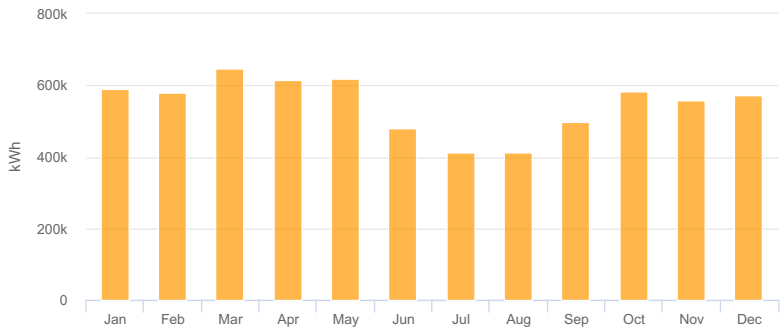
System Metrics

Design	Case Study 5 - Ground Mount, India (0.5% Shading Loss)
Module DC Nameplate	3.76 MW
Inverter AC Nameplate	4.00 MW Load Ratio: 0.94
Annual Production	6.568 GWh
Performance Ratio	80.0%
kWh/kWp	1,747.5
Weather Dataset	TMY, 10km Grid, meteonorm (meteonorm)
Simulator Version	77eaf2cdb5-02f2a7f506-20068b956b-d70d5f9ff0

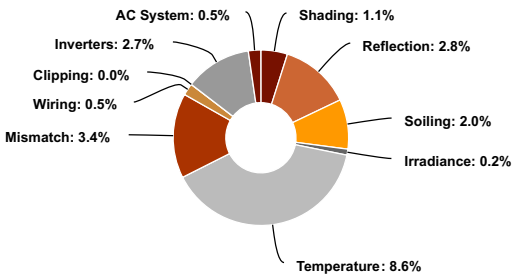
Project Location



Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	2,050.2	
	POA Irradiance	2,184.1	6.5%
	Shaded Irradiance	2,160.8	-1.1%
	Irradiance after Reflection	2,099.3	-2.8%
	Irradiance after Soiling	2,057.4	-2.0%
	Total Collector Irradiance	**2,057.3**	**0.0%**
Energy (kWh)	Nameplate	7,738,562.8	
	Output at Irradiance Levels	7,719,997.0	-0.2%
	Output at Cell Temperature Derate	7,056,611.1	-8.6%
	Output After Mismatch	6,815,694.3	-3.4%
	Optimal DC Output	6,782,864.1	-0.5%
	Constrained DC Output	6,782,755.0	0.0%
	Inverter Output	6,600,727.6	-2.7%
	Energy to Grid	**6,567,724.0**	**-0.5%**
Temperature Metrics			
	Avg. Operating Ambient Temp		27.1 °C
	Avg. Operating Cell Temp		39.8 °C
Simulation Metrics			
	Operating Hours		4659
	Solved Hours		4659

Condition Set

Description	Condition Set 1
Weather Dataset	TMY, 10km Grid, meteonorm (meteonorm)
Solar Angle Location	Meteo Lat/Lng
Transposition Model	Perez Model
Temperature Model	Sandia Model

Temperature Model Parameters

Rack Type	a	b	Temperature Delta
Fixed Tilt	-3.56	-0.075	3°C
Flush Mount	-2.81	-0.0455	0°C

Soiling (%)

J	F	M	A	M	J	J	A	S	O	N	D
2	2	2	2	2	2	2	2	2	2	2	2

Irradiation Variance	5%
Cell Temperature Spread	4° C
Module Binning Range	-2.5% to 2.5%
AC System Derate	0.50%

Module Characterizations

Module	Uploaded By	Characterization
CS3W-450MS (Canadian Solar)	Folsom Labs	Spec Sheet Characterization, PAN

Component Characterizations

Device	Uploaded By	Characterization
PVS800-MWS-1000kW-20 (Fimer (Formerly ABB))	Folsom Labs	Default Characterization

Components

Component	Name	Count
Inverters	PVS800-MWS-1000kW-20 (Fimer (Formerly ABB))	4 (4.00 MW)
Strings	10 AWG (Copper)	464 (164,464.7 ft)
Module	Canadian Solar, CS3W-450MS (450W)	8,352 (3.76 MW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	18-18	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Ground Mount	Fixed Tilt	Portrait (Vertical)	18°	180°	16.0 ft	2x18	232	8,352	3.76 MW

Detailed Layout