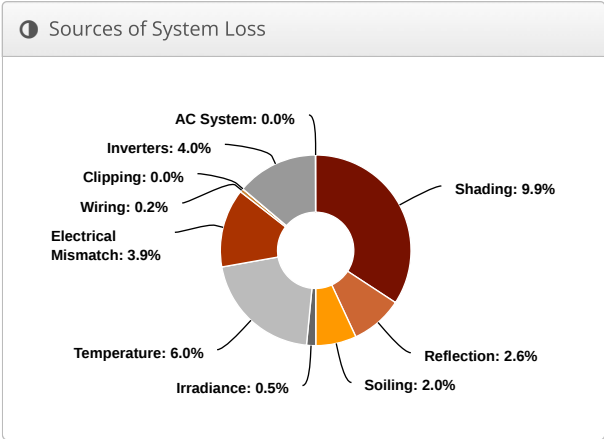
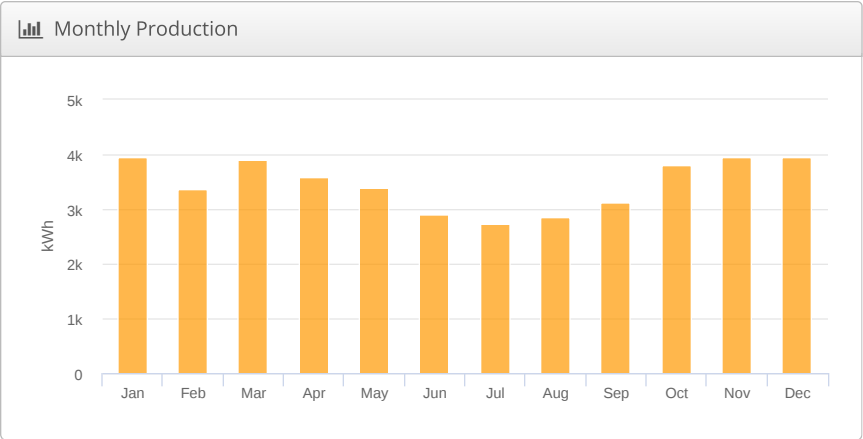
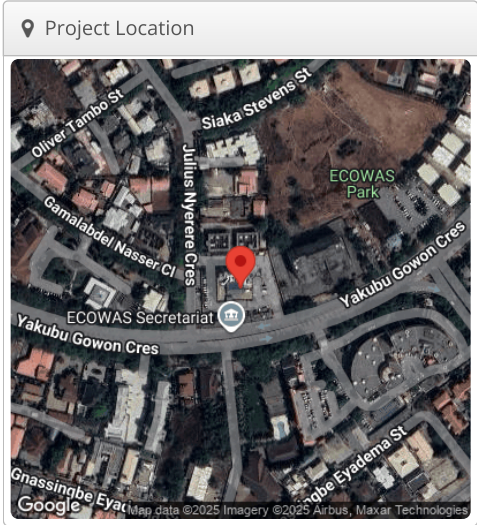


Design 45KVA inverter power backup and solar solution (Auxiliary buiding) world Bank, ECOWAS SECRETETIATE ABUJA

Report	
Project Name	world Bank
Project Description	Auxiliary building for 45KVA inverter power backup and solar solution
Project Address	ECOWAS SECRETETIATE ABUJA
Prepared By	Adaeze Enyesiobi adexbelle2000@gmail.com

System Metrics	
Design	Design 45KVA inverter power backup and solar solution (Auxiliary buiding)
Module DC Nameplate	27.00 kW
Inverter AC Nameplate	36.00 kW Load Ratio: 0.75
Annual Production	41.50 MWh
Performance Ratio	74.2%
kWh/kWp	1,537.0
Weather Dataset	TMY, Abuja, Nigeria, null (custom)
Simulator Version	664c764070-dc9bcecc85-bf66e52671-40835b708f



⚡ Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	2,024.0	
	POA Irradiance	2,071.8	2.4%
	Shaded Irradiance	1,866.5	-9.9%
	Irradiance after Reflection	1,818.6	-2.6%
	Irradiance after Soiling	1,782.2	-2.0%
	Total Collector Irradiance	1,782.3	0.0%
Energy (kWh)	Nameplate	48,130.4	
	Output at Irradiance Levels	47,913.3	-0.5%
	Output at Cell Temperature Derate	45,047.7	-6.0%
	Output after Electrical Mismatch	43,307.3	-3.9%
	Optimal DC Output	43,229.0	-0.2%
	Constrained DC Output	43,229.0	0.0%
	Inverter Output	41,499.8	-4.0%
	Energy to Grid	41,497.8	0.0%
Temperature Metrics			
Avg. Operating Ambient Temp		26.8 °C	
Avg. Operating Cell Temp		37.0 °C	
Simulation Metrics			
Operating Hours		4455	
Solved Hours		4455	

☁ Condition Set												
Description	Condition Set 1											
Weather Dataset	TMY, Abuja, Nigeria, null (custom)											
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				
	East-West			-3.56		-0.075		3°C				
	Carport			-3.56		-0.075		3°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
Albedo	J	F	M	A	M	J	J	A	S	O	N	D
	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Rear Mismatch Loss	10%				Rear Shading Factor				5%			
Module Transparency	0%											
Irradiation Variance	5%											
Cell Temperature Spread	4° C											
Module Binning Range	-2.5% to 2.5%											
AC System Derate	0.50%											
Module & Component Characterizations	Type	Component						Characterization			Bifacial	
	Module	JKM600N-78HL4-V (2021) (Jinko)						Spec Sheet Characterization, PAN			False	
	Inverter	Victron Hybrid 15KVA + 450/200 (Victron Energy)						Spec Sheet			N/A	

Components		
Component	Name	Count
Inverters	Victron Hybrid 15KVA + 450/200 (Victron Energy)	3 (36.00 kW)
AC Home Runs	6 AWG (Copper)	3 (5.8 ft)
Home Runs	4 AWG (Copper)	6 (592.9 ft)
Combiners	1 input Combiner	6
Strings	6 AWG (Copper)	6 (395.3 ft)
Module	Jinko, JKM600N-78HL4-V (2021) (600W)	45 (27.00 kW)

Wiring Zones									
Description		Combiner Poles		String Size		Stringing Strategy			
Wiring to the inverter room		2		2-9		Up and Down Racking			

Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Auxiliary building	Carport	Portrait (Vertical)	10°	180°	2.0 ft	1x1	45	45	27.00 kW

Detailed Layout2

