ENERGY YIELD REPORT - CONCEPT DESIGN

Project Name: Energy Yield Demo

Configuration: String Inverter

for

Demo

Date: 2024-10-31

Disclaimer

1.1 Project Summary

Site Parameters

PARAMETER	VALUE
Latitude [°]	-14.442938
Longitude [°]	34.600020
Altitude [m]	560.0
Time Zone	UTC
Maximum Temperature [°C]	36.22
Minimum Temperature [°C]	9.6
Average Temperature [°C]	22.97
Meteorological Data Source	ERA5
Solar Resource TMY	PVGIS-SARAH3
TMY Years	2005-2023

System Parameters

PARAMETER	VALUE
Plant Architecture	String Inverter
Pitch [m]	6.0
Ground Coverage Ratio	0.3776
Tracker Width [m]	2.266
Tracker Height [m]	1.5
Albedo	0.2
Axis Tilt [°]	0.0
Axis Azimuth [°]	0.0
Backtracking	True
Max Backtracking Angle [°]	+/-55.0
Bifaciality Factor	0.7

Models

PARAMETER	VALUE
Transposition Model	Hay-Davies
IAM Model	Ashrae
Temperature Model	PVSyst
DC Model	PVWatts
AC Model	PVWatts
Losses Model	PVWatts

1.2 Equipment Details

PV Module

PARAMETER	VALUE
Manufacturer	Risen
Model	RSM144-9-535BMDG-535
Power (@STC) [Wp]	535
PV Modules per String	28
Total PV Strings	1,900
Total PV Modules	53,200
Total PV Power [kWp]	28,462

Inverter

PARAMETER	VALUE
Manufacturer	Sungrow
Model	SG250HX-24
Rating (30°C) [kVA]	250
Total Inverters	92
Total Inverter Power [kVA]	23,000

1.3 Losses

Collection Losses

PARAMETER	VALUE
Shading [%]	-3.00
IAM [%]	-0.5811
Soiling [%]	-2.00
Snow [%]	-0.00
Degradation [%]	-0.00
Temperature [%]	-6.344
Module Quality [%]	+1.00
Light-Induced-Degradation [%]	-1.50
Module Mismatch [%]	-2.00
Connections [%]	-0.00
DC Wiring [%]	-1.00
Availability [%]	-0.00

System Losses

PARAMETER	VALUE
Inverter [%]	-1.23
AC Wiring [%]	-1.00
MV Line [%]	-0.40
Transformer Constant [%]	-0.10
Transformer Resistive [%]	-1.00

1.4 Results

Results Summary

PARAMETER	VALUE
Annual Energy Production [MWh/year]	61,573
Specific Production [kWh/kWp/year]	2,218
Performance Ratio [%]	82.28

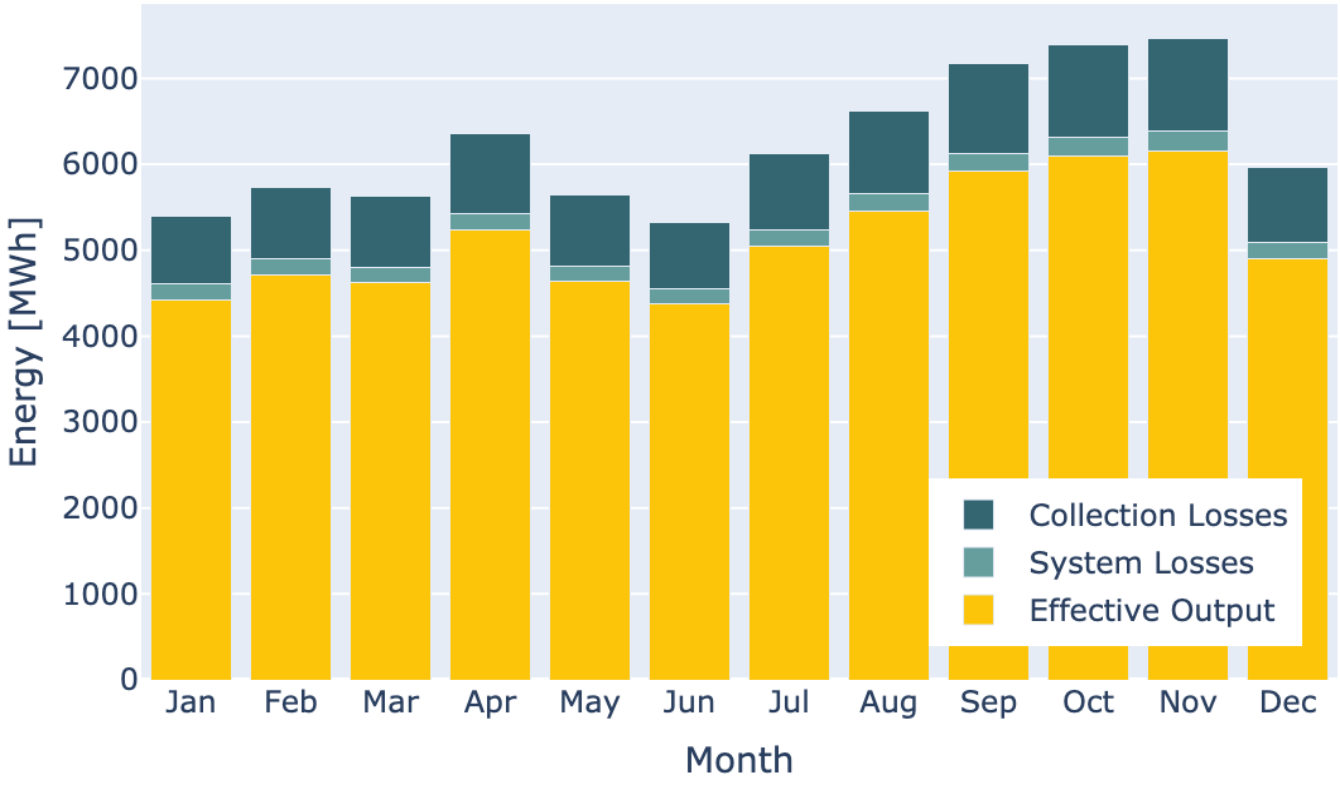
Monthly Averages

	TEMP	GHI	DNI	DHI	G_POA	G_EFF	E_ARR	E_GRID	PR
	°C	kWh/m²	kWh/m²	kWh/m²	kWh/m²	kWh/m²	MWh	MWh	%
Jan	24.05	154.60	100.70	79.05	187.80	187.60	4,612	4,425	81.95
Feb	24.18	162.90	124.80	66.71	201.30	201.10	4,900	4,714	82.19
Mar	23.01	161.10	113.40	76.47	196.20	195.80	4,806	4,618	82.10
Apr	22.01	170.70	170.70	55.38	223.20	222.20	5,432	5,233	82.29
May	21.18	147.50	171.00	42.33	197.50	195.90	4,820	4,645	82.33
Jun	20.05	142.00	167.70	40.86	186.00	184.10	4,553	4,382	82.23
Jul	19.22	159.60	197.40	43.12	214.60	212.30	5,231	5,043	82.36
Aug	20.75	175.20	189.70	50.54	232.50	231.10	5,654	5,452	82.38
Sep	24.39	193.10	183.50	64.75	252.70	251.80	6,130	5,914	82.42
Oct	25.45	201.10	175.70	73.27	260.30	259.90	6,315	6,092	82.40
Nov	27.24	204.40	191.00	63.00	264.40	263.80	6,384	6,160	82.43
Dec	24.27	171.20	116.80	83.48	207.80	207.40	5,090	4,895	82.16
Year	22.98	2,044	1,903	739.00	2,625	2,614	63,925	61,573	82.27

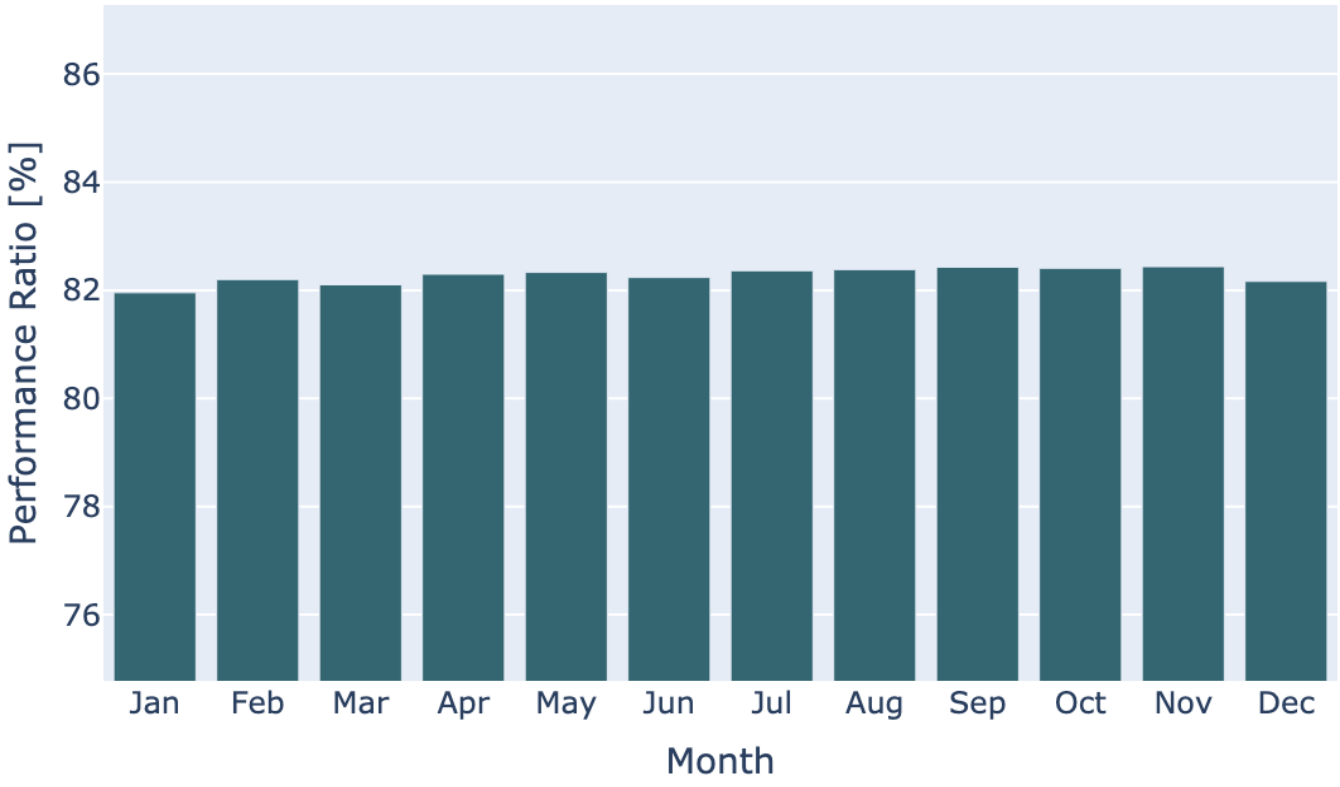
Legend

TEMP	Ambient Temperature	G_EFF	Global Effective Irradiation
GHI	Global Horizontal Irradiation	E_ARR	Effective Output Energy of Array
DNI	Direct Normal Irradiation	E_GRID	Effective Input Energy to the Grid
DHI	Diffuse Horizontal Irradiation	PR	Performance Ratio
G_POA	Global Plane of Array Irradiation		

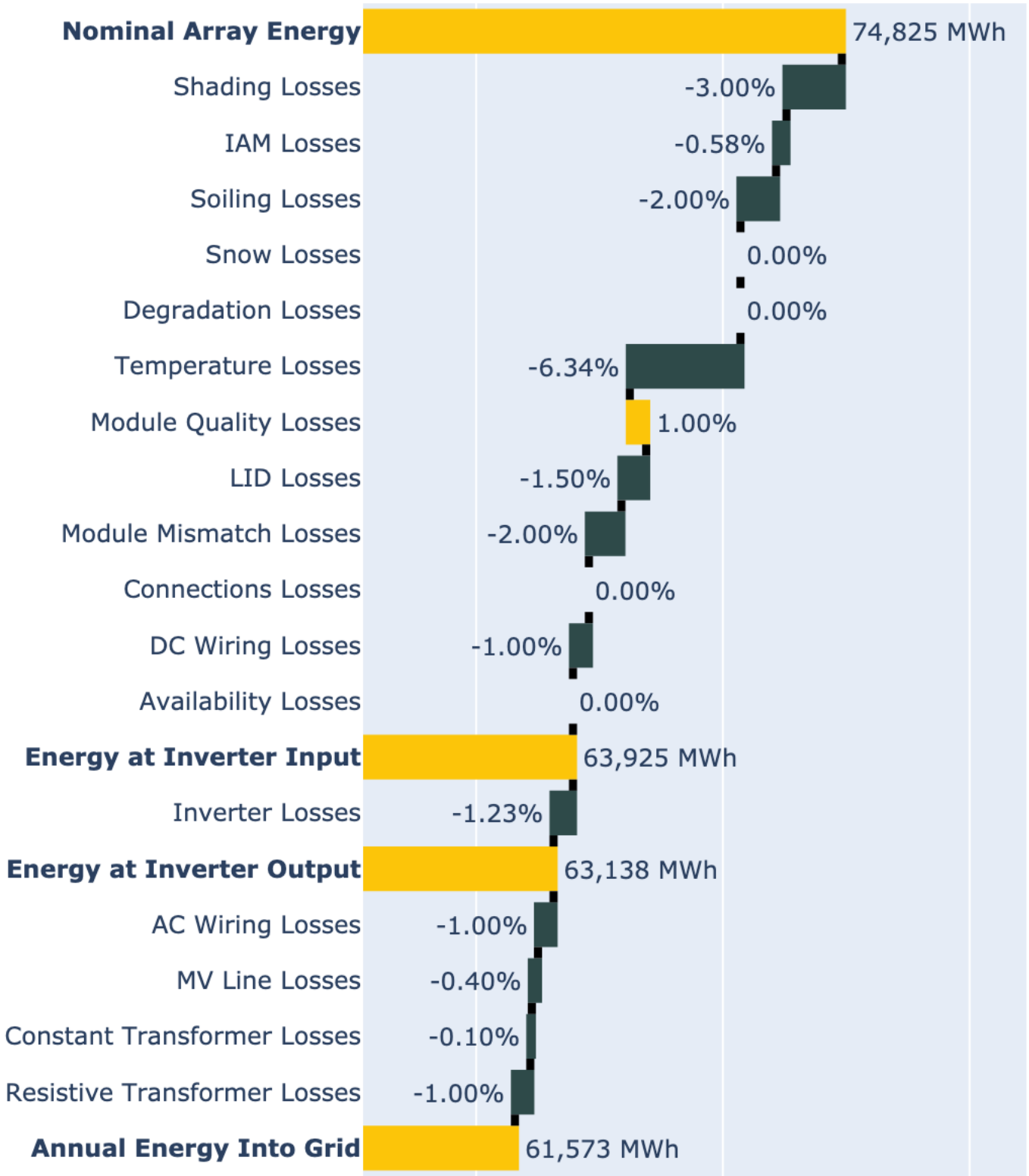
Monthly Energy Production



Performance Ratio



1.5 Losses Diagram



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