Final Case Study - Netherlands

Final Case Study - Netherlands, 52.405030240710886, 4.764400728827001

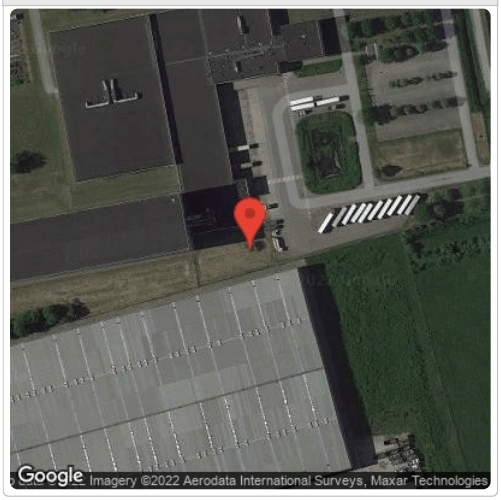
Report

Project Name	Final Case Study - Netherlands
Project Address	52.405030240710886, 4.764400728827001
Prepared By	Bhanu Swaroop Gaddam gaddambhanu9@gmail.com

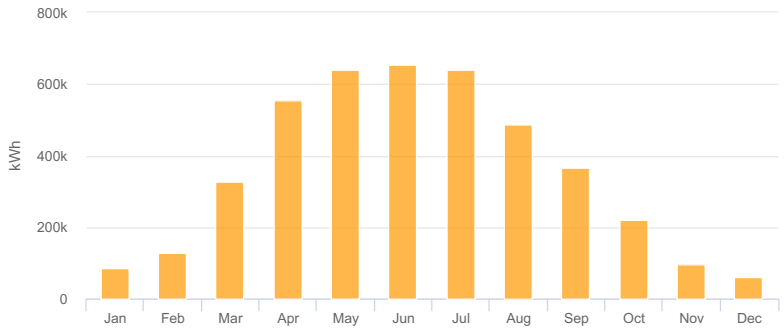
System Metrics

Design	Final Case Study - Netherlands
Module DC Nameplate	4.96 MW
Inverter AC Nameplate	4.05 MW Load Ratio: 1.22
Annual Production	4.257 GWh
Performance Ratio	83.5%
kWh/kWp	858.1
Weather Dataset	TMY, 10km Grid, meteonorm (meteonorm)
Simulator Version	77eaf2cdb5-02f2a7f506-20068b956b-d70d5f9ff0

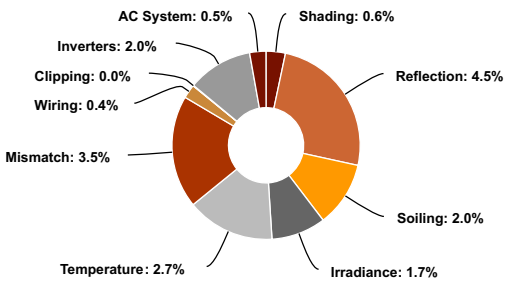
Project Location



Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,000.4	
	POA Irradiance	1,028.3	2.8%
	Shaded Irradiance	1,022.2	-0.6%
	Irradiance after Reflection	976.4	-4.5%
	Irradiance after Soiling	956.9	-2.0%
	Total Collector Irradiance	**956.9**	**0.0%**
Energy (kWh)	Nameplate	4,747,033.1	
	Output at Irradiance Levels	4,667,854.8	-1.7%
	Output at Cell Temperature Derate	4,541,777.1	-2.7%
	Output After Mismatch	4,384,833.3	-3.5%
	Optimal DC Output	4,366,288.8	-0.4%
	Constrained DC Output	4,365,579.6	0.0%
	Inverter Output	4,278,265.0	-2.0%
	Energy to Grid	**4,256,873.7**	**-0.5%**
Temperature Metrics			
	Avg. Operating Ambient Temp		13.1 °C
	Avg. Operating Cell Temp		21.0 °C
Simulation Metrics			
	Operating Hours		4599
	Solved Hours		4599

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
HiKu CS3W 415P (Canadian Solar)	Folsom Labs	Spec Sheet Characterization, PAN

Component Characterizations

Device	Uploaded By	Characterization
Sunny Tripower Core1/US (SMA)	Folsom Labs	Spec Sheet

Components

Component	Name	Count
Inverters	Sunny Tripower Core1/US (SMA)	81 (4.05 MW)
Strings	10 AWG (Copper)	696 (90,011.1 m)
Module	Canadian Solar, HiKu CS3W 415P (415W)	11,954 (4.96 MW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	13-19	Along Racking
Wiring Zone 2	-	13-19	Along Racking
Wiring Zone 3	-	13-19	Along Racking
Wiring Zone 4	-	13-19	Along Racking
Wiring Zone 5	-	13-19	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Site #1	Fixed Tilt	Landscape (Horizontal)	10°	169.67494°	0.6 m	1x1	1,413	1,154	478.9 kW
Site #2	Fixed Tilt	Landscape (Horizontal)	10°	169.52528°	0.6 m	1x1	1,194	1,194	495.5 kW
Site #3 (SouthSide)	Flush Mount	Landscape (Horizontal)	10°	164.73888°	0.0 m	1x1	3,332	3,332	1.38 MW
Site #3 (NorthSide)	Flush Mount	Landscape (Horizontal)	10°	344.79196°	0.0 m	1x1	3,610	3,610	1.50 MW
Site #4	Fixed Tilt	Portrait (Vertical)	10°	165.11374°	2.0 m	2x18	74	2,664	1.11 MW

Detailed Layout