System Simulation Report

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Author:

Location: Jl. Pantai Sel. Jawa No.16, Pantai, Sidoharjo, Tepus, Kabupaten Gunung Kidul, Daerah Istimewa Yogyakarta 55881, Indonesia (8°9,0'S, 110°36,8'E)

Total Net Present Cost: Rp1.191.534,00

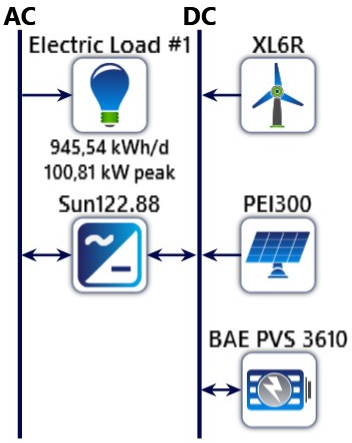
Levelized Cost of Energy (Rp/kWh): Rp0,190

Notes:

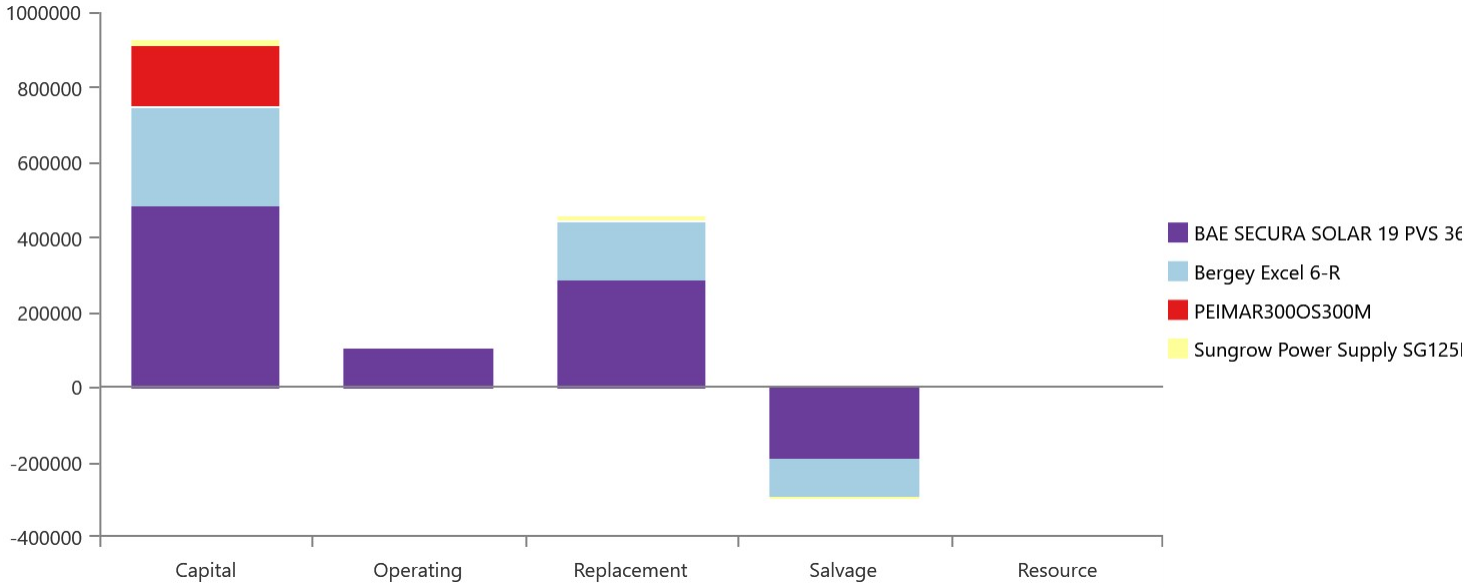
System Architecture

Component	Name	Size	Unit
PV	PEIMAR300OS300M	280	kW
Storage	BAE SECURA SOLAR 19 PVS 3610	2	strings
Wind turbine	Bergey Excel 6-R	12	ea.
System converter	Sungrow Power Supply SG125HV	125	kW
Dispatch strategy	HOMER Cycle Charging		

Schematic



Cost Summary



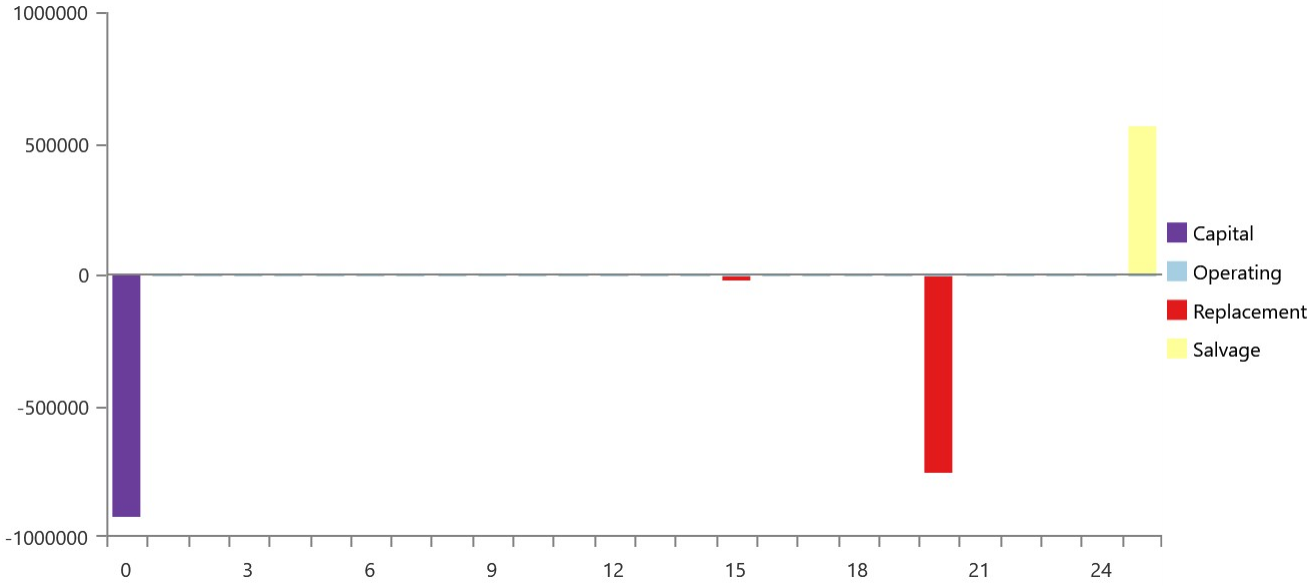
Net Present Costs

Name	Capital	Operating	Replacement	Salvage	Resource	Total
BAE SECURA SOLAR 19 PVS 3610	Rp485.826	Rp108.875	Rp288.860	-Rp190.240	Rp0,00	Rp693.322
Bergey Excel 6-R	Rp264.000	Rp0,00	Rp156.968	-Rp103.377	Rp0,00	Rp317.591
PEIMAR300OS300M	Rp160.720	Rp0,00	Rp0,00	Rp0,00	Rp0,00	Rp160.720
Sungrow Power Supply SG125HV	Rp13.240	Rp0,00	Rp8.965	-Rp2.304	Rp0,00	Rp19.901
System	Rp923.786	Rp108.875	Rp454.793	-Rp295.921	Rp0,00	Rp1,19M

Annualized Costs

Name	Capital	Operating	Replacement	Salvage	Resource	Total
BAE SECURA SOLAR 19 PVS 3610	Rp26.773	Rp6.000	Rp15.919	-Rp10.484	Rp0,00	Rp38.208
Bergey Excel 6-R	Rp14.549	Rp0,00	Rp8.650	-Rp5.697	Rp0,00	Rp17.502
PEIMAR300OS300M	Rp8.857	Rp0,00	Rp0,00	Rp0,00	Rp0,00	Rp8.857
Sungrow Power Supply SG125HV	Rp729,64	Rp0,00	Rp494,04	-Rp126,98	Rp0,00	Rp1.097
System	Rp50.909	Rp6.000	Rp25.063	-Rp16.308	Rp0,00	Rp65.664

Cash Flow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Capital
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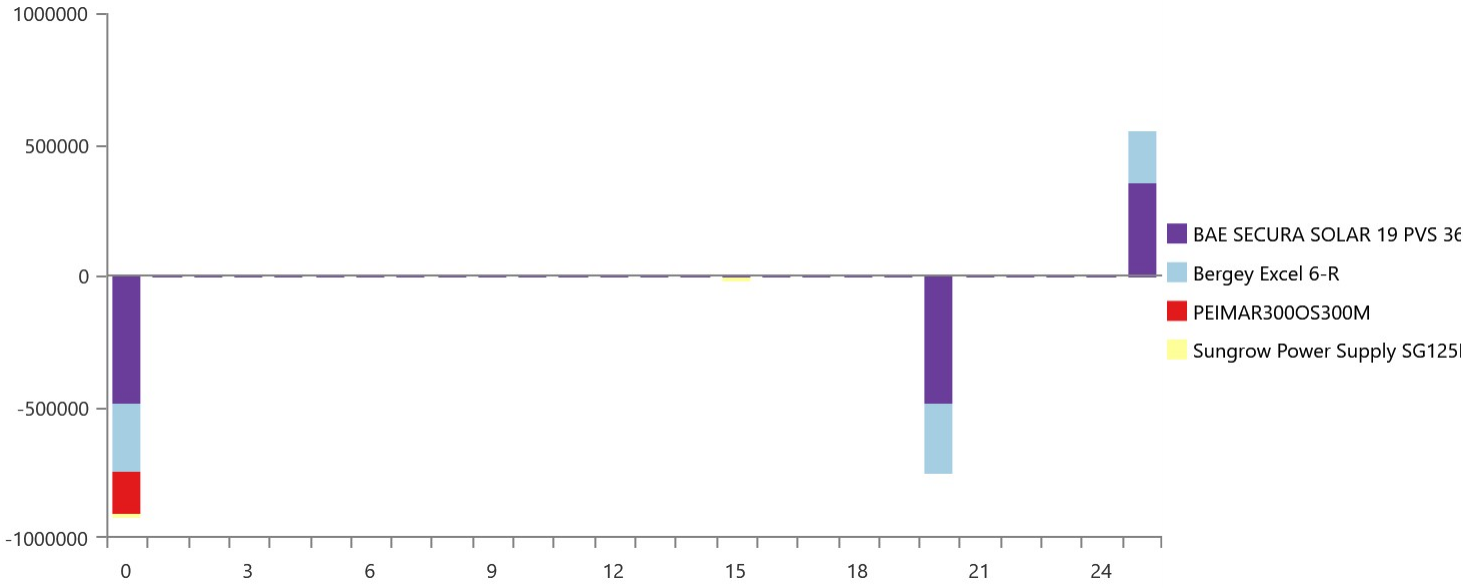
Replacement
Salvage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BAE SECURA SOLAR 19 PVS 3€
Bergey Excel 6-R
PEIMAR300OS300M
Sungrow Power Supply SG125I

Electrical Summary

Excess and Unmet

Quantity	Value	Units
Excess Electricity	130.173	kWh/yr
Unmet Electric Load	0	kWh/yr
Capacity Shortage	0	kWh/yr

Production Summary

Component	Production (kWh/yr)	Percent
PEIMAR300OS300M	445.052	87,4
Bergey Excel 6-R	64.208	12,6
Total	509.260	100

Consumption Summary

Component	Consumption (kWh/yr)	Percent
AC Primary Load	345.121	100
DC Primary Load	0	0
Total	345.121	100

PV: PEIMAR300OS300M

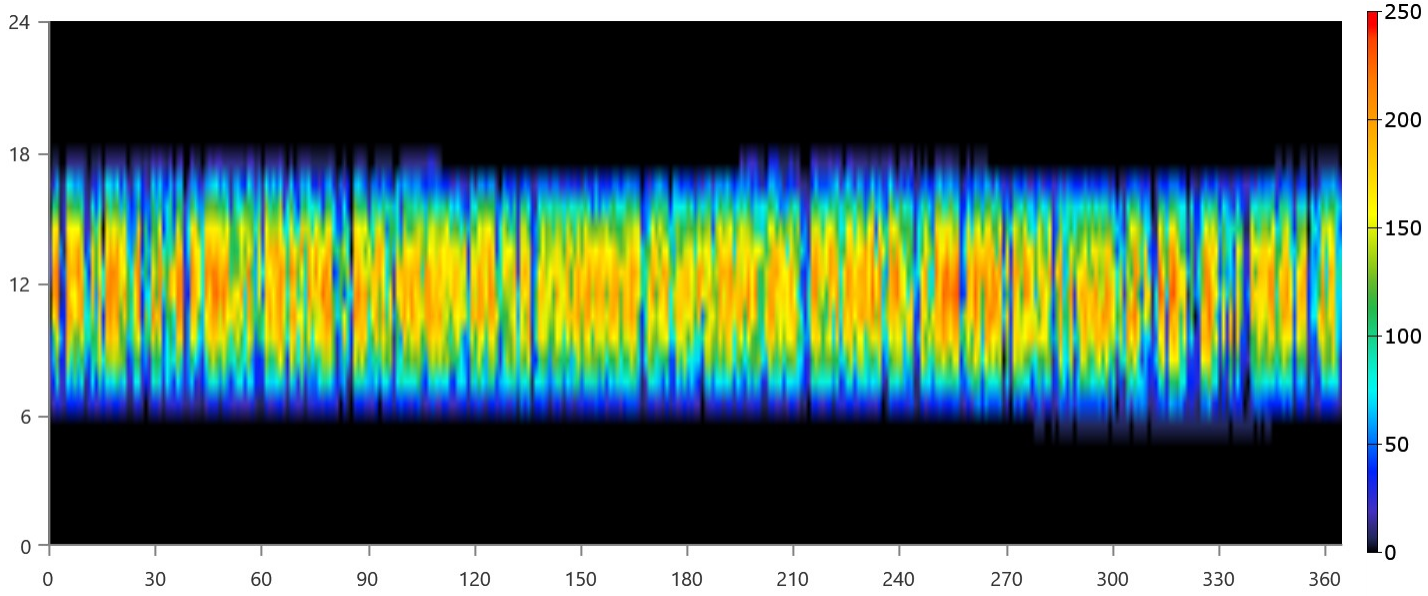
PEIMAR300OS300M Electrical Summary

Quantity	Value	Units
Minimum Output	0	kW
Maximum Output	239	kW
PV Penetration	129	%
Hours of Operation	4.371	hrs/yr
Levelized Cost	0,0199	Rp/kWh

PEIMAR300OS300M Statistics

Quantity	Value	Units
Rated Capacity	280	kW
Mean Output	50,8	kW
Mean Output	1.219	kWh/d
Capacity Factor	18,1	%
Total Production	445.052	kWh/yr

PEIMAR300OS300M Output (kW)



Wind Turbine: Bergey Excel 6-R

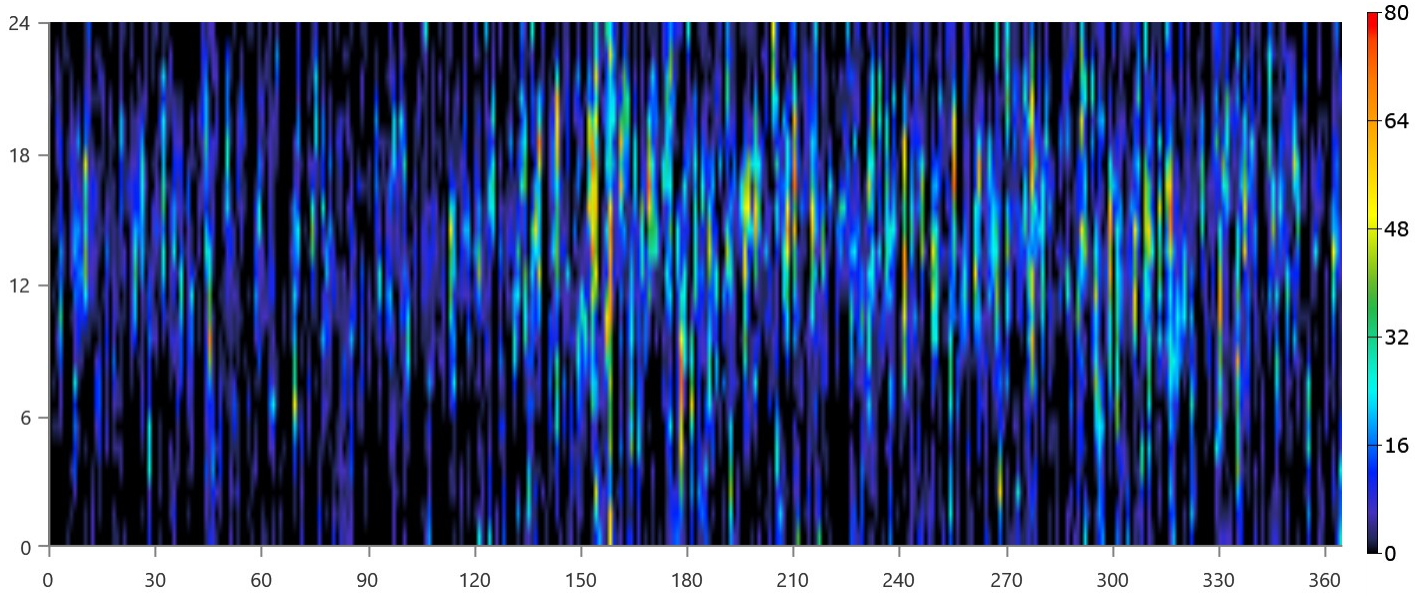
Bergey Excel 6-R Electrical Summary

Quantity	Value	Units
Minimum Output	0	kW
Maximum Output	75,6	kW
Wind Penetration	18,6	%
Hours of Operation	7.228	hrs/yr
Levelized Cost	0,273	Rp/kWh

Bergey Excel 6-R Statistics

Quantity	Value	Units
Total Rated Capacity	72,0	kW
Mean Output	7,33	kW
Capacity Factor	10,2	%
Total Production	64.208	kWh/yr

Bergey Excel 6-R Output (kW)



Storage: BAE SECURA SOLAR 19 PVS 3610

BAE SECURA SOLAR 19 PVS 3610 Properties

Quantity	Value	Units
Batteries	600	qty.
String Size	300	batteries
Strings in Parallel	2,00	strings
Bus Voltage	600	V

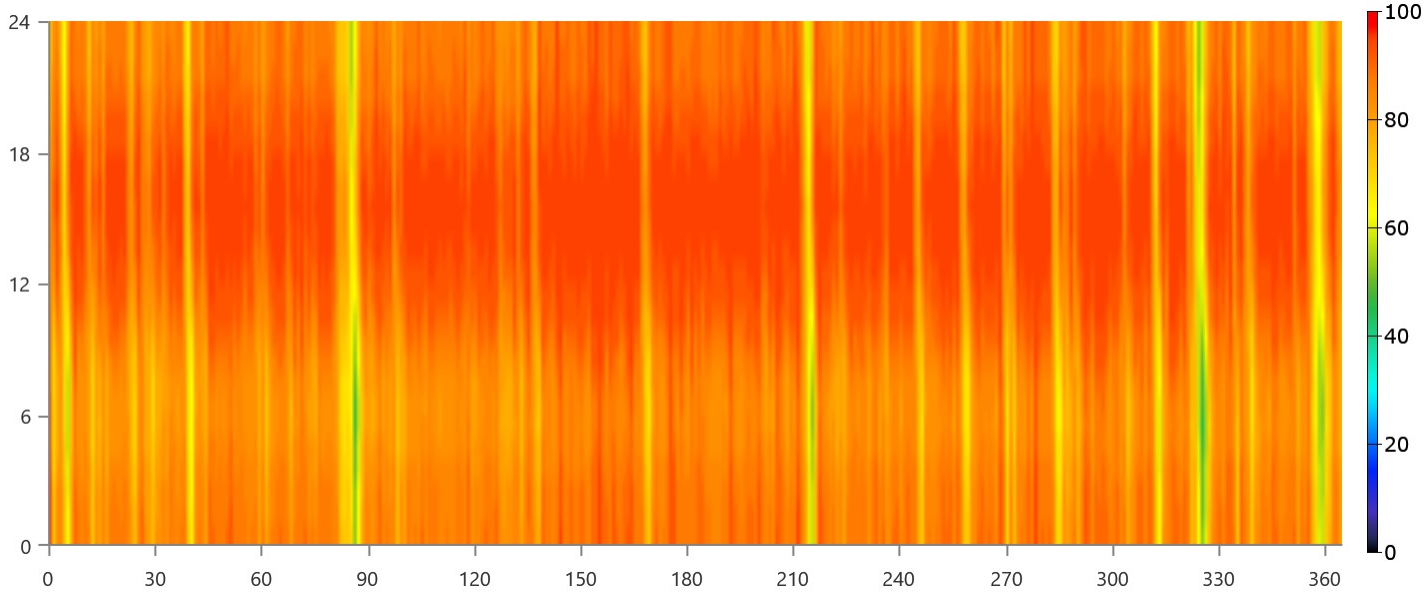
BAE SECURA SOLAR 19 PVS 3610 Result Data

Quantity	Value	Units
Average Energy Cost	0	Rp/kWh
Energy In	196.976	kWh/yr
Energy Out	168.266	kWh/yr
Storage Depletion	907	kWh/yr
Losses	29.617	kWh/yr
Annual Throughput	182.510	kWh/yr

BAE SECURA SOLAR 19 PVS 3610 Statistics

Quantity	Value	Units
Autonomy	82,9	hr
Storage Wear Cost	0,124	Rp/kWh
Nominal Capacity	4.083	kWh
Usable Nominal Capacity	3.266	kWh
Lifetime Throughput	3.650.193	kWh
Expected Life	20,0	yr

BAE SECURA SOLAR 19 PVS 3610 State of Charge (%)



Converter: Sungrow Power Supply SG125HV

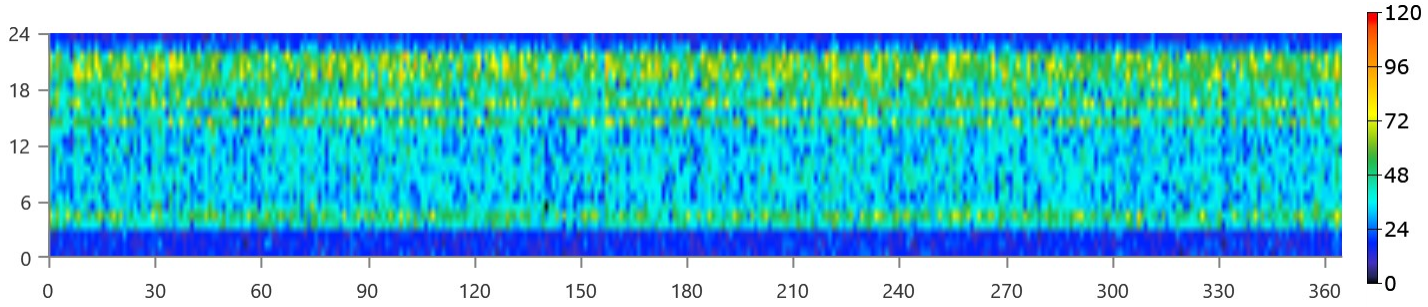
Sungrow Power Supply SG125HV Electrical Summary

Quantity	Value	Units
Hours of Operation	8.760	hrs/yr
Energy Out	345.121	kWh/yr
Energy In	350.377	kWh/yr
Losses	5.256	kWh/yr

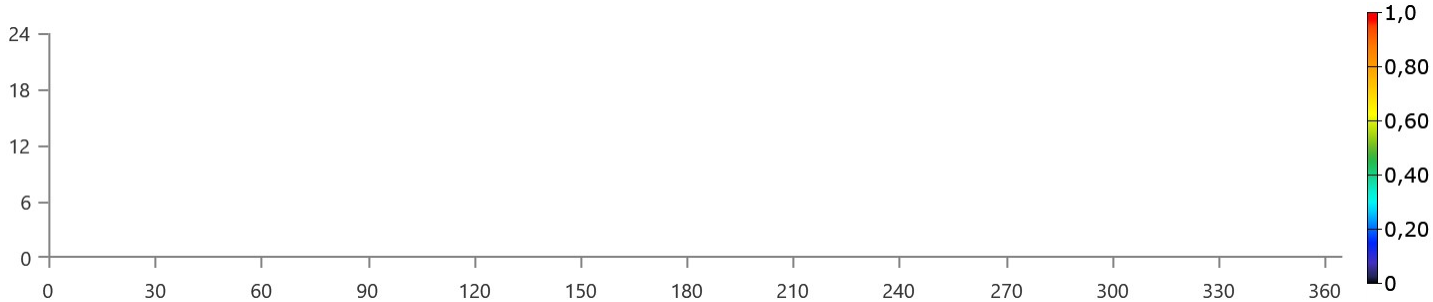
Sungrow Power Supply SG125HV Statistics

Quantity	Value	Units
Capacity	125	kW
Mean Output	39,4	kW
Minimum Output	1,84	kW
Maximum Output	101	kW
Capacity Factor	31,5	%

Sungrow Power Supply SG125HV Inverter Output (kW)



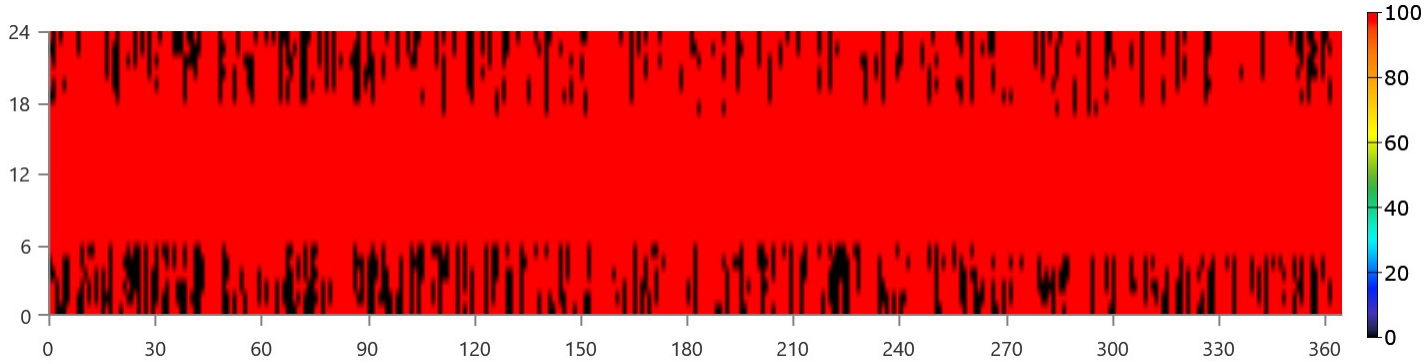
Sungrow Power Supply SG125HV Rectifier Output (kW)



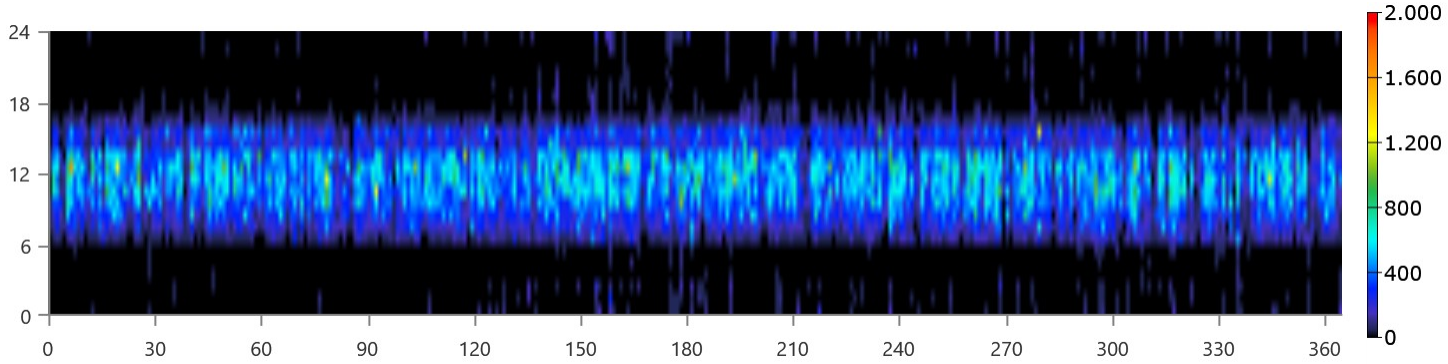
Renewable Summary

Capacity-based metrics	Value	Unit
Nominal renewable capacity divided by total nominal capacity	100	%
Usable renewable capacity divided by total capacity	100	%
Energy-based metrics	**Value**	**Unit**
Total renewable production divided by load	148	%
Total renewable production divided by generation	100	%
One minus total nonrenewable production divided by load	100	%
Peak values	**Value**	**Unit**
Renewable output divided by load (HOMER standard)	1.708	%
Renewable output divided by total generation	100	%
One minus nonrenewable output divided by total load	100	%

Instantaneous Renewable Output Percentage of Total Generation



Instantaneous Renewable Output Percentage of Total Load



100% Minus Instantaneous Nonrenewable Output as Percentage of Total Load