

Daftar Pustaka

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LAMPIRAN

System Simulation Report



File: 50%.homer

Author: Universitas Hasanuddin

Location: Buntu Batu, Bupon, Luwu Regency, South Sulawesi, Indonesia (3°15.1'S, 120°17.1'E)

Total Net Present Cost: \$10,674.47

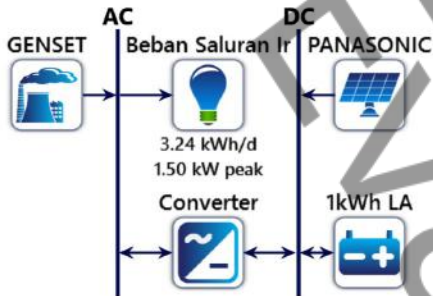
Levelized Cost of Energy (\$/kWh): \$0.698

Notes: SKENARIO 50%

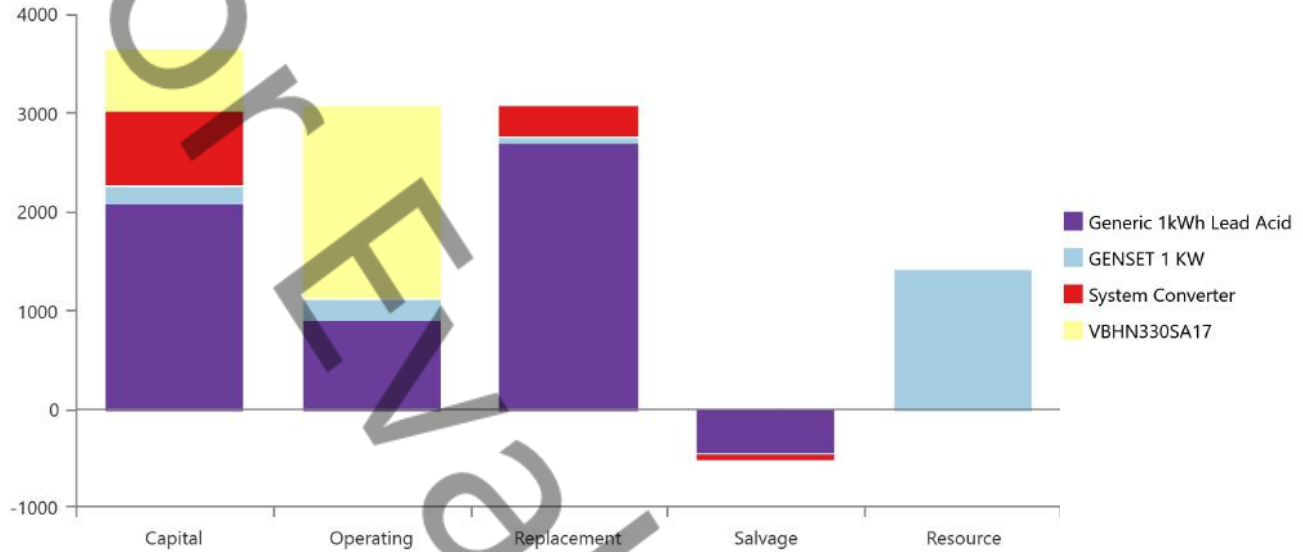
System Architecture

Component	Name	Size	Unit
Generator	GENSET 1 KW	0.750	kW
PV	VBHN330SA17	0.960	kW
Storage	Generic 1kWh Lead Acid	7	strings
System converter	System Converter	2.00	kW
Dispatch strategy	HOMER Load Following		

Schematic



Cost Summary



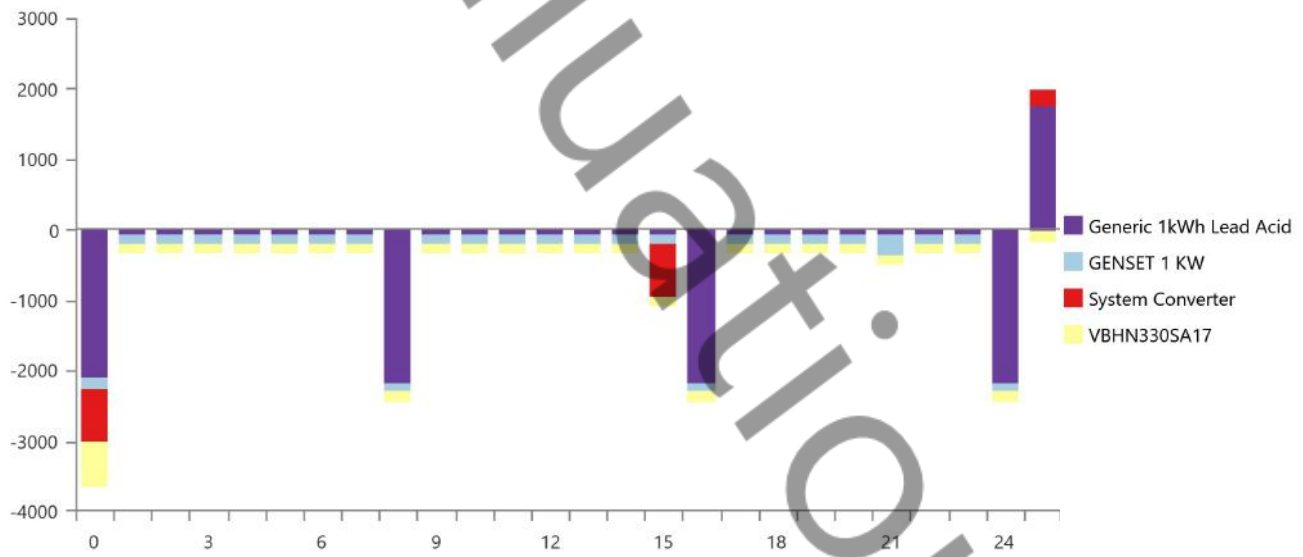
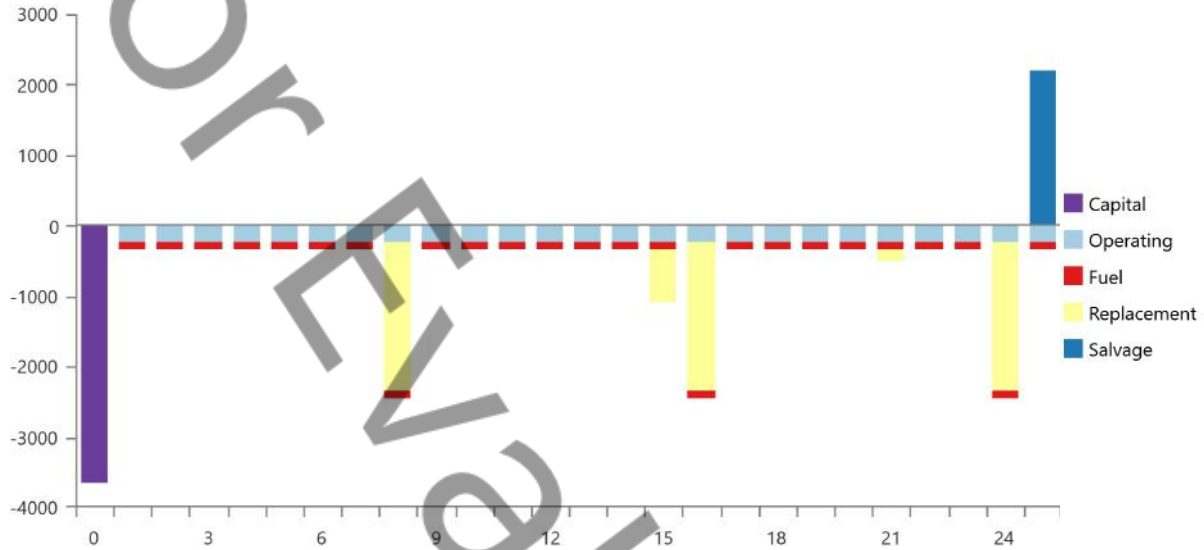
Net Present Costs

Name	Capital	Operating	Replacement	Salvage	Resource	Total
Generic 1kWh Lead Acid	\$2,100	\$904.93	\$2,706	-\$438.46	\$0.00	\$5,272
GENSET 1 KW	\$156.71	\$212.33	\$48.42	-\$29.41	\$1,429	\$1,817
System Converter	\$751.74	\$0.00	\$318.94	-\$60.03	\$0.00	\$1,011
VBHN330SA17	\$634.95	\$1,939	\$0.00	\$0.00	\$0.00	\$2,574
System	\$3,643	\$3,056	\$3,073	-\$527.90	\$1,429	\$10,674

Annualized Costs

Name	Capital	Operating	Replacement	Salvage	Resource	Total
Generic 1kWh Lead Acid	\$162.44	\$70.00	\$209.30	-\$33.92	\$0.00	\$407.83
GENSET 1 KW	\$12.12	\$16.43	\$3.75	-\$2.27	\$110.57	\$140.59
System Converter	\$58.15	\$0.00	\$24.67	-\$4.64	\$0.00	\$78.18
VBHN330SA17	\$49.12	\$150.00	\$0.00	\$0.00	\$0.00	\$199.12
System	\$281.83	\$236.43	\$237.72	-\$40.84	\$110.57	\$825.72

Cash Flow



Electrical Summary

Excess and Unmet

Quantity	Value	Units
Excess Electricity	646	kWh/yr
Unmet Electric Load	0	kWh/yr
Capacity Shortage	0	kWh/yr

Production Summary

Component	Production (kWh/yr)	Percent
VBHN330SA17	1,470	72.9
GENSET 1 KW	548	27.1
Total	2,018	100

Consumption Summary

Component	Consumption (kWh/yr)	Percent
AC Primary Load	1,183	100
DC Primary Load	0	0
Deferrable Load	0	0
Total	1,183	100

Generator: GENSET 1 KW (Diesel)

GENSET 1 KW Electrical Summary

Quantity	Value	Units
Electrical Production	548	kWh/yr
Mean Electrical Output	0.750	kW
Minimum Electrical Output	0.750	kW
Maximum Electrical Output	0.750	kW

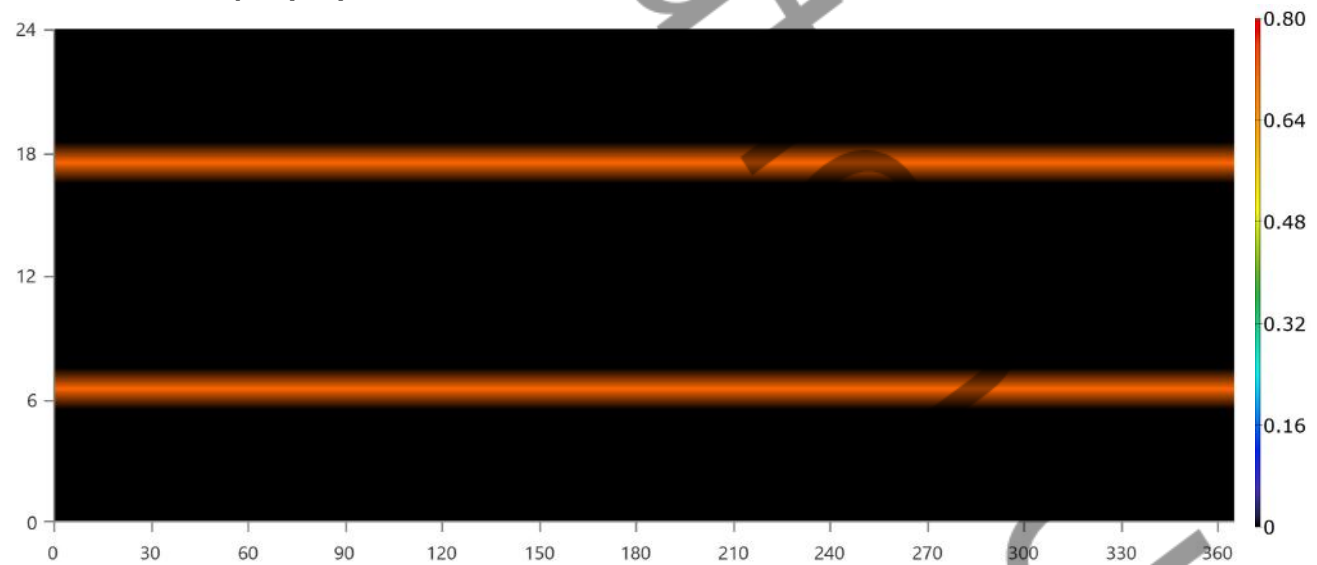
GENSET 1 KW Fuel Summary

Quantity	Value	Units
Fuel Consumption	168	L
Specific Fuel Consumption	0.306	L/kWh
Fuel Energy Input	1,649	kWh/yr
Mean Electrical Efficiency	33.2	%

GENSET 1 KW Statistics

Quantity	Value	Units
Hours of Operation	730	hrs/yr
Number of Starts	730	starts/yr
Operational Life	20.5	yr
Capacity Factor	8.33	%
Fixed Generation Cost	0.0493	\$/hr
Marginal Generation Cost	0.180	\$/kWh

GENSET 1 KW Output (kW)

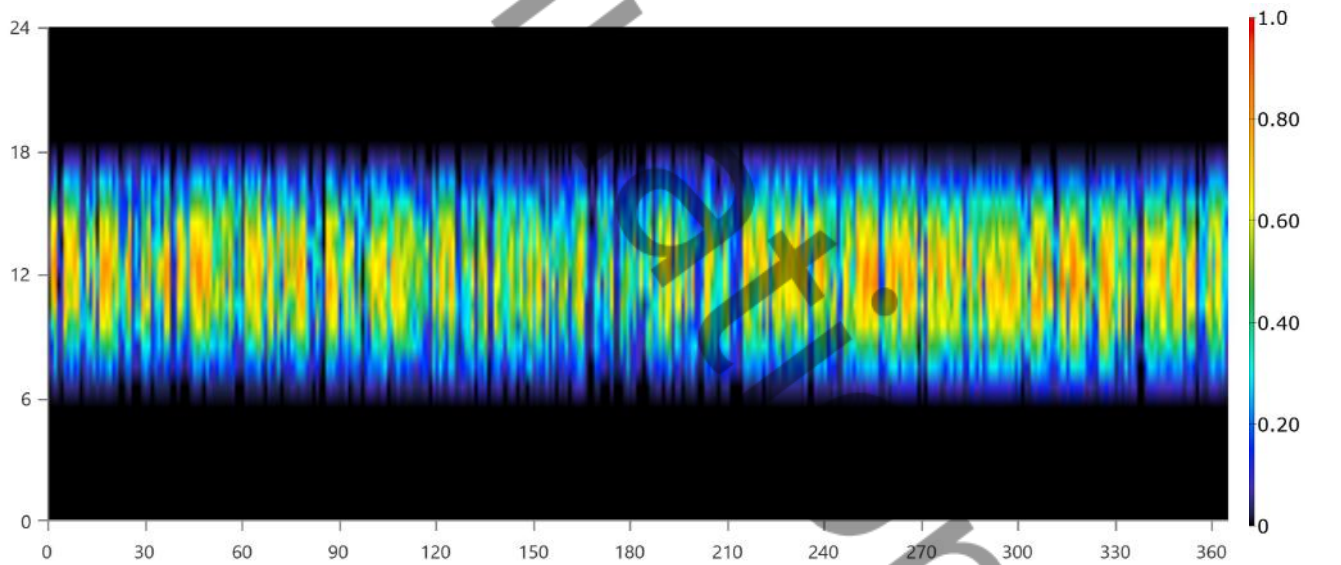


PV: VBHN330SA17
VBHN330SA17 Electrical Summary

Quantity	Value	Units
Minimum Output	0	kW
Maximum Output	0.926	kW
PV Penetration	124	%
Hours of Operation	4,380	hrs/yr
Levelized Cost	0.135	\$/kWh

VBHN330SA17 Statistics

Quantity	Value	Units
Rated Capacity	0.960	kW
Mean Output	0.168	kW
Mean Output	4.03	kWh/d
Capacity Factor	17.5	%
Total Production	1,470	kWh/yr

VBHN330SA17 Output (kW)


Storage: Generic 1kWh Lead Acid

Generic 1kWh Lead Acid Properties

Quantity	Value	Units
Batteries	7.00	qty.
String Size	1.00	batteries
Strings in Parallel	7.00	strings
Bus Voltage	12.0	V

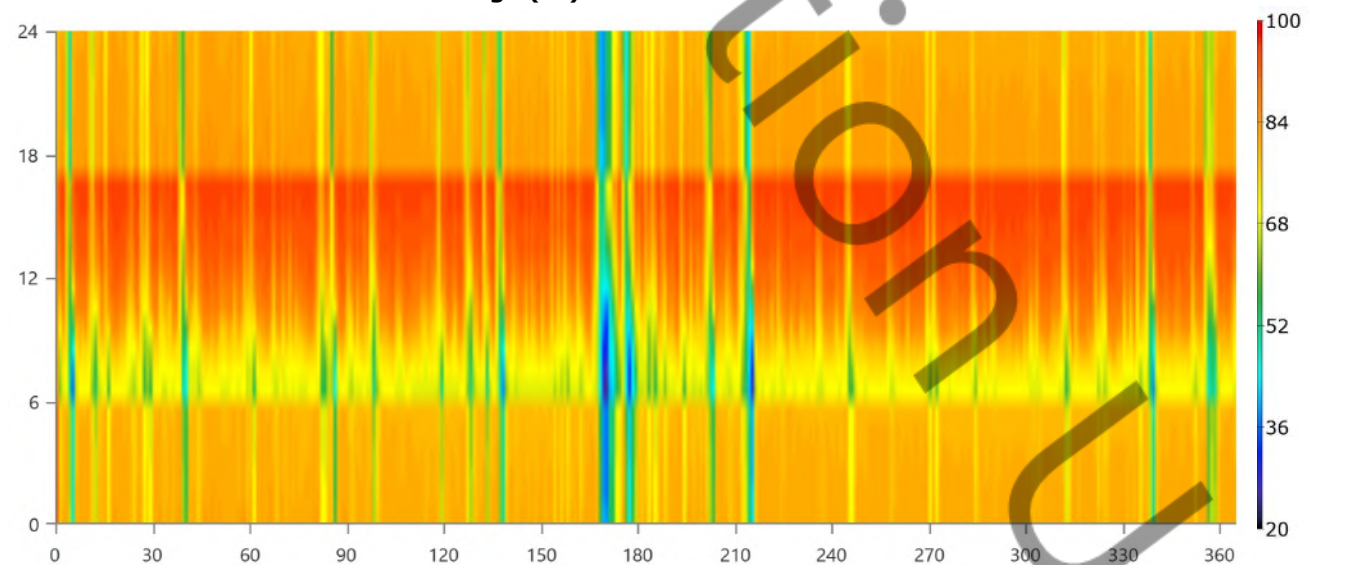
Generic 1kWh Lead Acid Result Data

Quantity	Value	Units
Average Energy Cost	0	\$/kWh
Energy In	782	kWh/yr
Energy Out	627	kWh/yr
Storage Depletion	1.19	kWh/yr
Losses	157	kWh/yr
Annual Throughput	701	kWh/yr

Generic 1kWh Lead Acid Statistics

Quantity	Value	Units
Autonomy	41.5	hr
Storage Wear Cost	0.419	\$/kWh
Nominal Capacity	7.01	kWh
Usable Nominal Capacity	5.60	kWh
Lifetime Throughput	5,600	kWh
Expected Life	7.99	yr

Generic 1kWh Lead Acid State of Charge (%)



Converter: System Converter

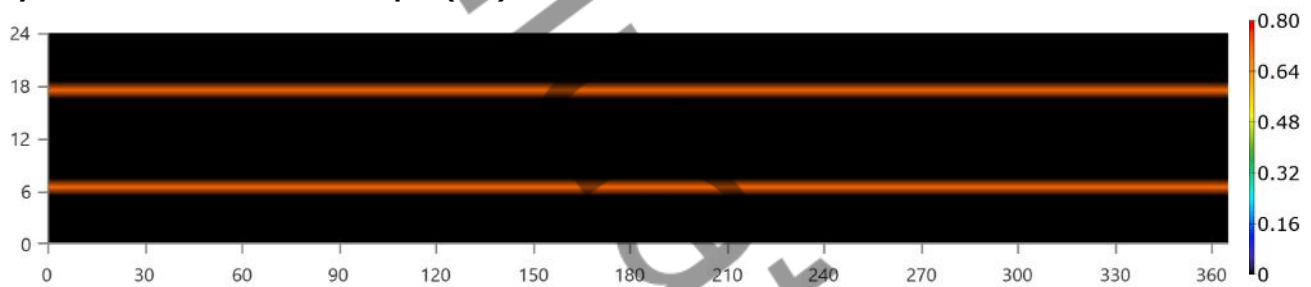
System Converter Electrical Summary

Quantity	Value	Units
Hours of Operation	5,110	hrs/yr
Energy Out	635	kWh/yr
Energy In	669	kWh/yr
Losses	33.4	kWh/yr

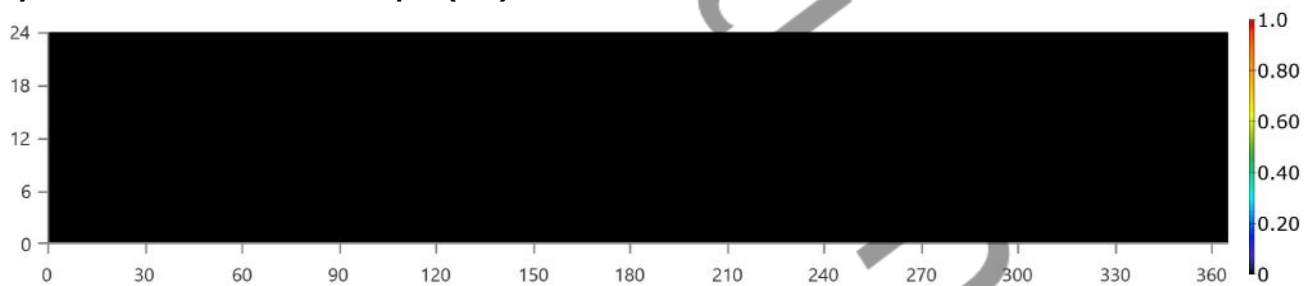
System Converter Statistics

Quantity	Value	Units
Capacity	2.00	kW
Mean Output	0.0725	kW
Minimum Output	0	kW
Maximum Output	0.750	kW
Capacity Factor	3.63	%

System Converter Inverter Output (kW)



System Converter Rectifier Output (kW)

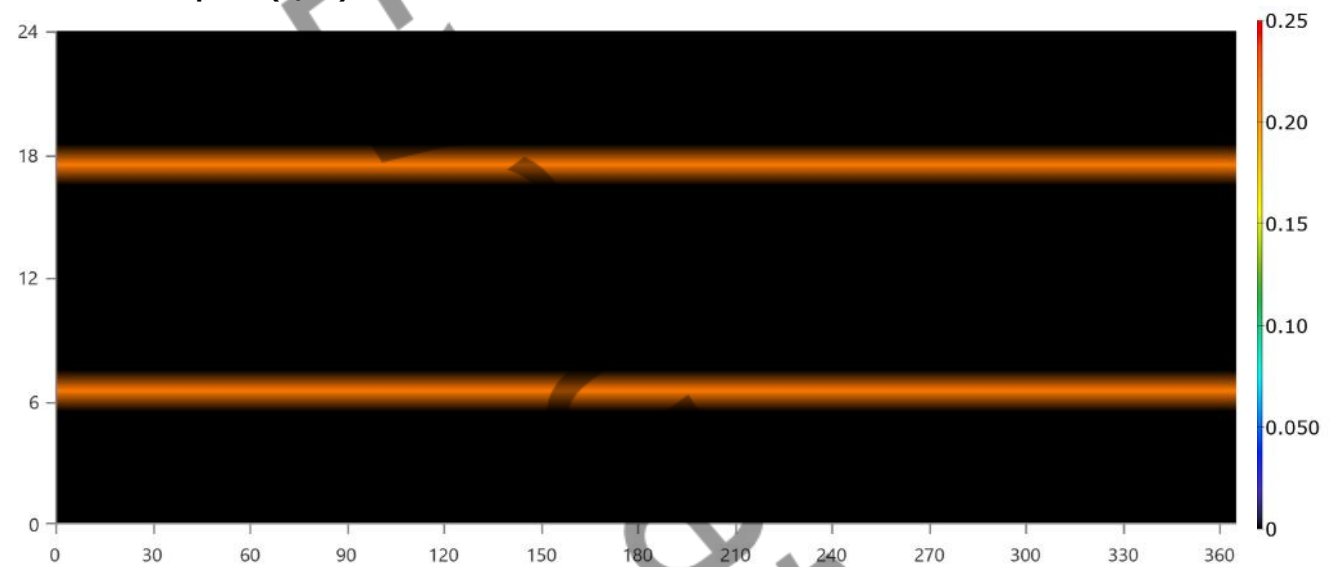


Fuel Summary

Diesel Consumption Statistics

Quantity	Value	Units
Total fuel consumed	168	L
Avg fuel per day	0.459	L/day
Avg fuel per hour	0.0191	L/hour

Diesel Consumption (L/hr)



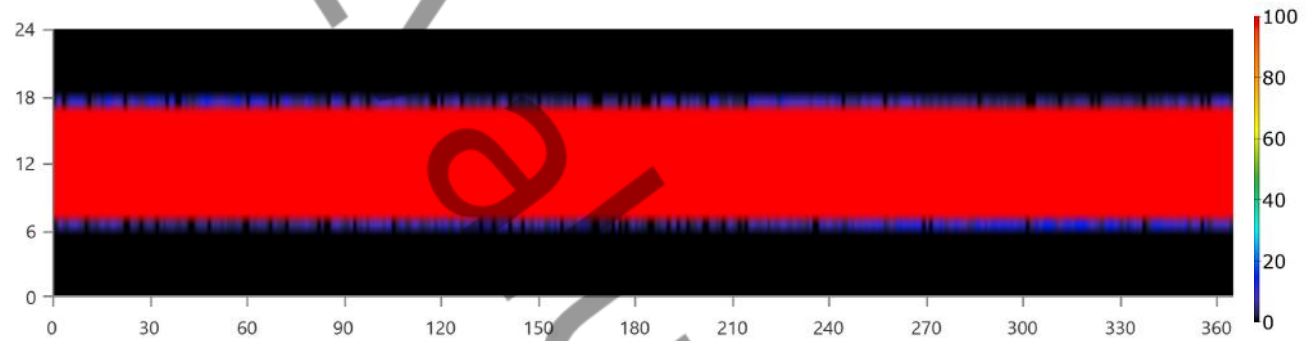
Emissions

Pollutant	Quantity	Unit
Carbon Dioxide	439	kg/yr
Carbon Monoxide	2.74	kg/yr
Unburned Hydrocarbons	0.121	kg/yr
Particulate Matter	0.0164	kg/yr
Sulfur Dioxide	1.07	kg/yr
Nitrogen Oxides	2.57	kg/yr

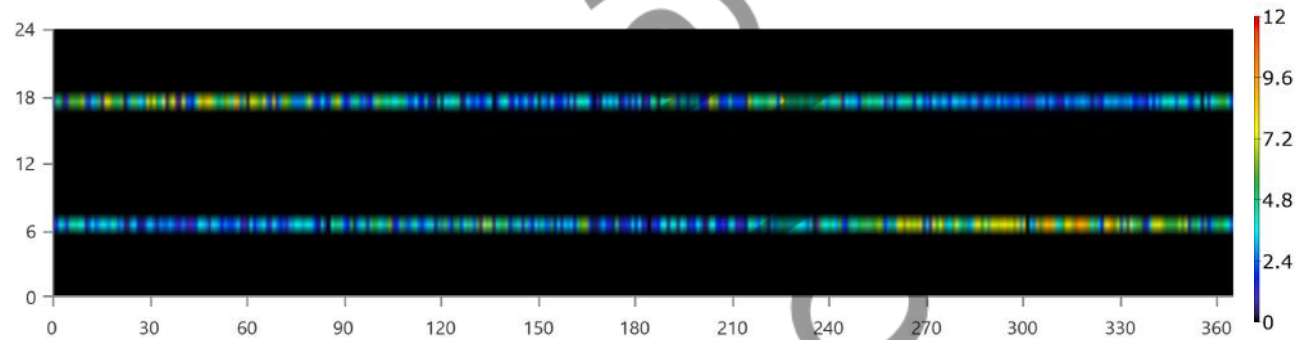
Renewable Summary

Capacity-based metrics	Value	Unit
Nominal renewable capacity divided by total nominal capacity	56.1	%
Usable renewable capacity divided by total capacity	50.6	%
Energy-based metrics	Value	Unit
Total renewable production divided by load	124	%
Total renewable production divided by generation	72.9	%
One minus total nonrenewable production divided by load	53.7	%
Peak values	Value	Unit
Renewable output divided by load (HOMER standard)	10.9	%
Renewable output divided by total generation	100	%
One minus nonrenewable output divided by total load	100	%

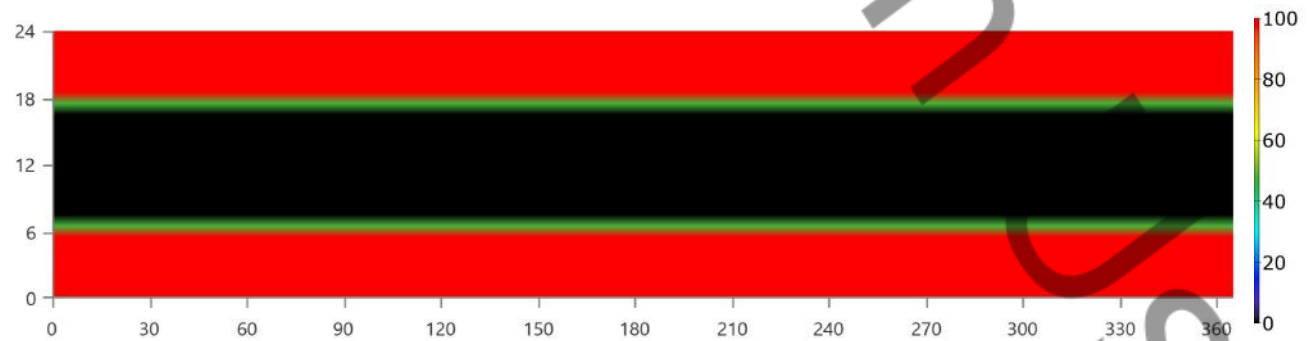
Instantaneous Renewable Output Percentage of Total Generation



Instantaneous Renewable Output Percentage of Total Load



100% Minus Instantaneous Nonrenewable Output as Percentage of Total Load



Compare Economics

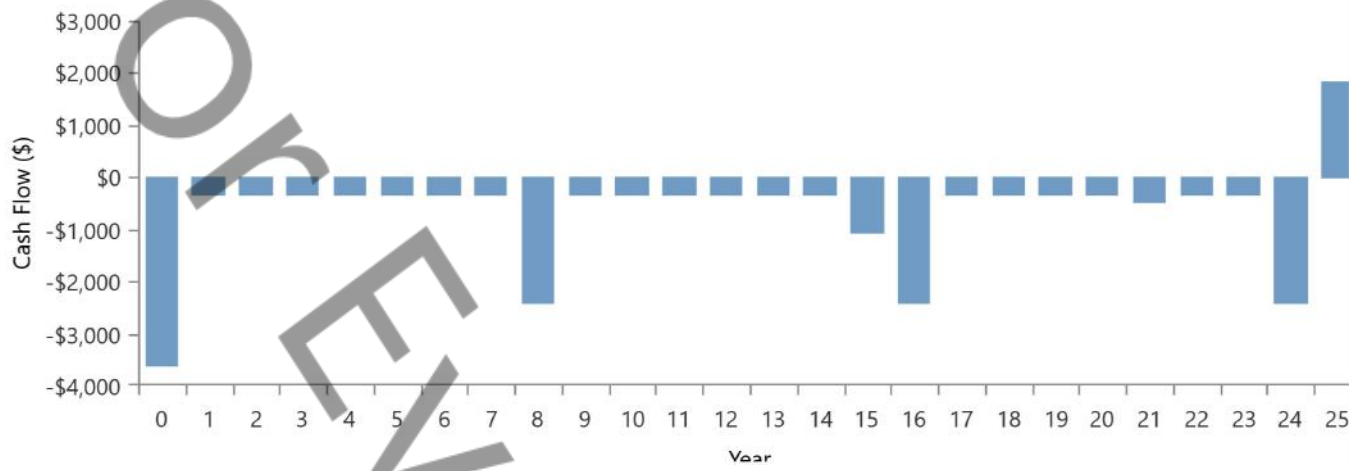
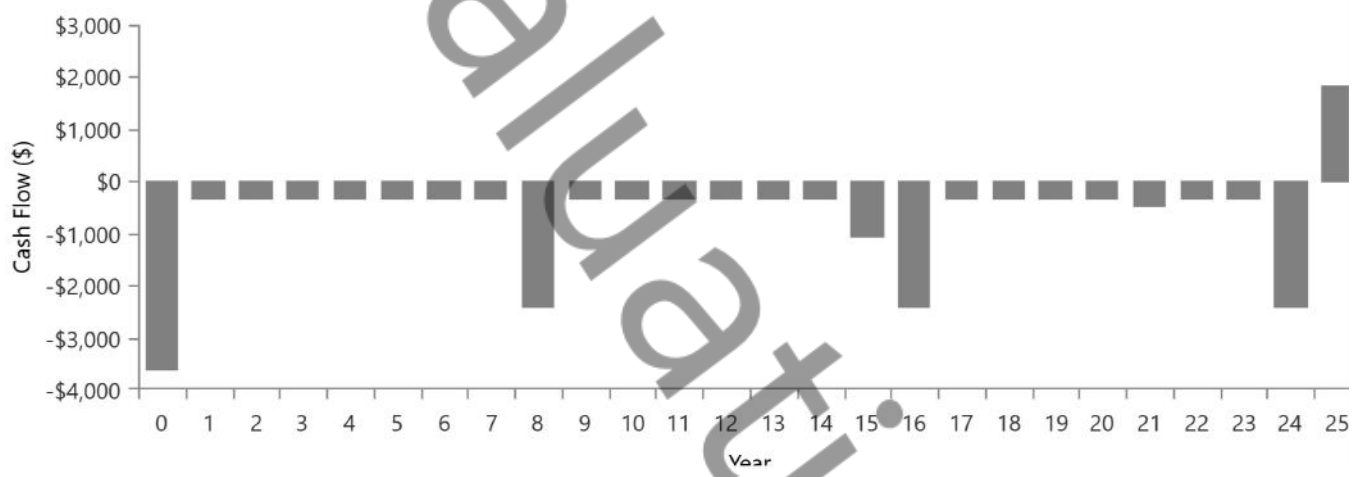
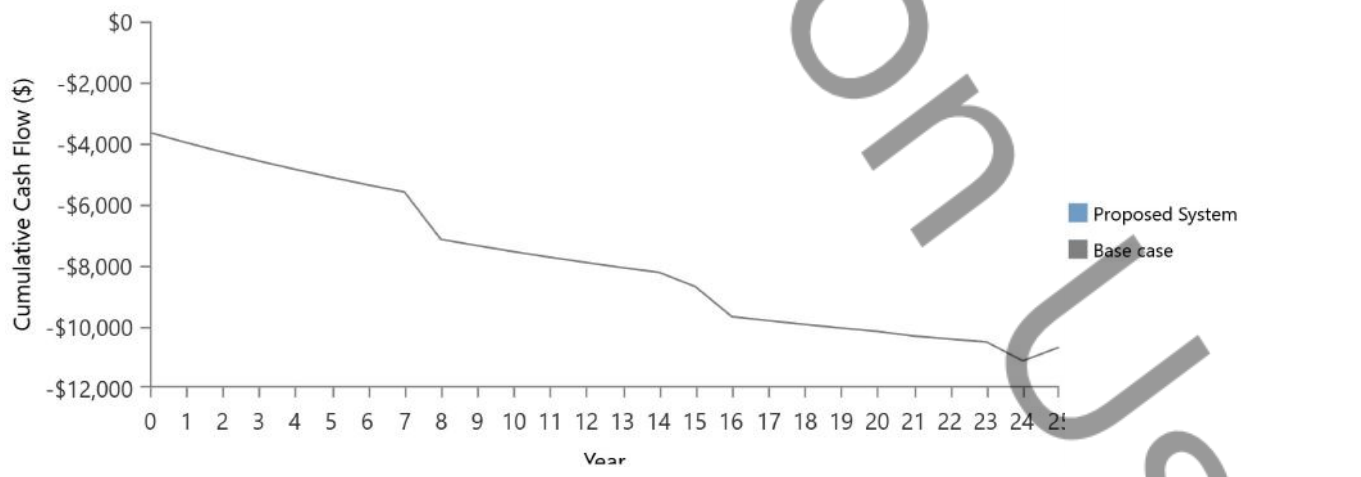
IRR (%): **N/A**

Discounted payback (yr): **N/A**

Simple payback (yr): **N/A**

	Base System	Proposed System
Net Present Cost	\$10,674	\$10,674
CAPEX	\$3,643	\$3,643
OPEX	\$543.88	\$543.88
LCOE (per kWh)	\$0.698	\$0.698
CO2 Emitted (kg/yr)	439	439
Fuel Consumption (L/yr)	168	168

Evaluation Not for Use

Proposed Annual Nominal Cash Flows

Base System Annual Nominal Cash Flows

Cumulative Discounted Cash Flows




HOMER
Pro

System Simulation Report



File: 75%.homer

Author: Universitas Hasanuddin

Location: Buntu Batu, Bupon, Luwu Regency, South Sulawesi, Indonesia (3°15.1'S, 120°17.1'E)

Total Net Present Cost: \$12,916.24

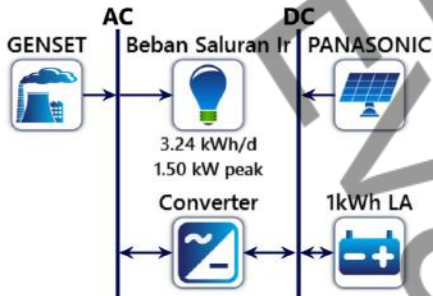
Levelized Cost of Energy (\$/kWh): \$0.845

Notes: skenario 75%

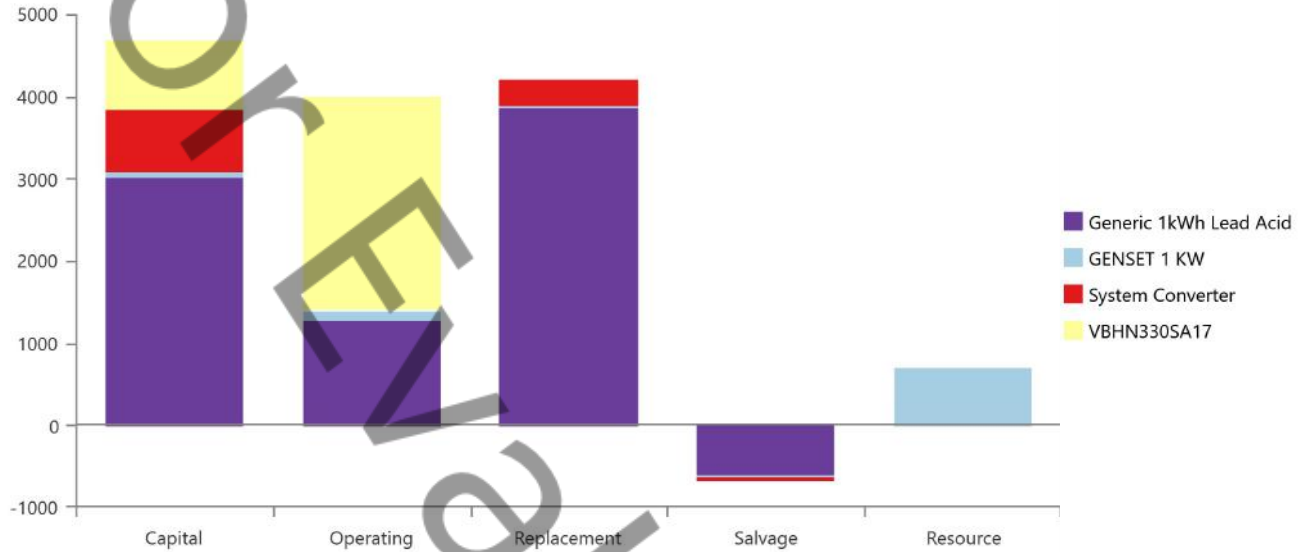
System Architecture

Component	Name	Size	Unit
Generator	GENSET 1 KW	0.375	kW
PV	VBHN330SA17	1.28	kW
Storage	Generic 1kWh Lead Acid	10	strings
System converter	System Converter	2.00	kW
Dispatch strategy	HOMER Load Following		

Schematic



Cost Summary



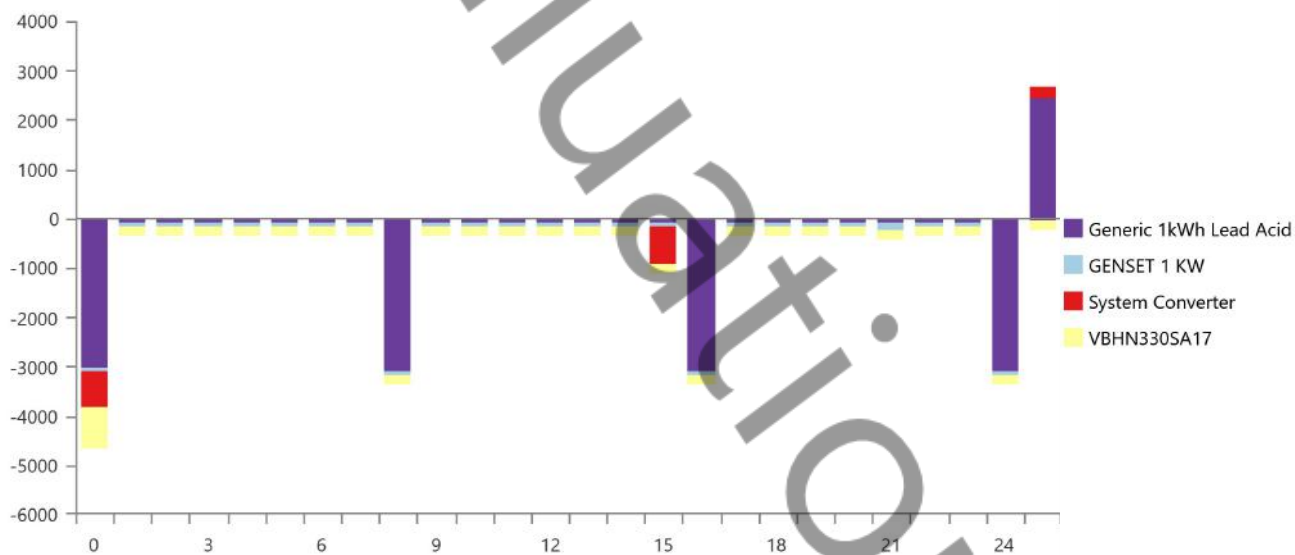
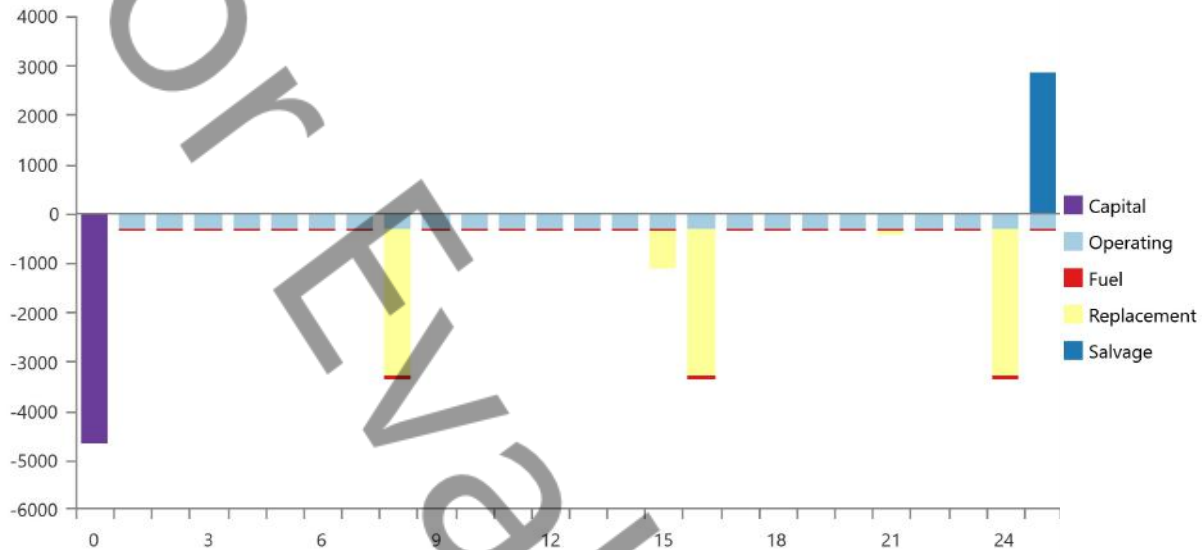
Net Present Costs

Name	Capital	Operating	Replacement	Salvage	Resource	Total
Generic 1kWh Lead Acid	\$3,000	\$1,293	\$3,884	-\$612.26	\$0.00	\$7,565
GENSET 1 KW	\$78.36	\$106.17	\$24.21	-\$14.70	\$714.72	\$908.75
System Converter	\$751.74	\$0.00	\$318.94	-\$60.03	\$0.00	\$1,011
VBHN330SA17	\$846.60	\$2,586	\$0.00	\$0.00	\$0.00	\$3,432
System	\$4,677	\$3,984	\$4,227	-\$686.99	\$714.72	\$12,916

Annualized Costs

Name	Capital	Operating	Replacement	Salvage	Resource	Total
Generic 1kWh Lead Acid	\$232.06	\$100.00	\$300.46	-\$47.36	\$0.00	\$585.17
GENSET 1 KW	\$6.06	\$8.21	\$1.87	-\$1.14	\$55.29	\$70.30
System Converter	\$58.15	\$0.00	\$24.67	-\$4.64	\$0.00	\$78.18
VBHN330SA17	\$65.49	\$200.00	\$0.00	\$0.00	\$0.00	\$265.49
System	\$361.76	\$308.21	\$327.01	-\$53.14	\$55.29	\$999.13

Cash Flow



Electrical Summary

Excess and Unmet

Quantity	Value	Units
Excess Electricity	780	kWh/yr
Unmet Electric Load	0	kWh/yr
Capacity Shortage	0.0609	kWh/yr

Production Summary

Component	Production (kWh/yr)	Percent
VBHN330SA17	1,960	87.7
GENSET 1 KW	274	12.3
Total	2,234	100

Consumption Summary

Component	Consumption (kWh/yr)	Percent
AC Primary Load	1,183	100
DC Primary Load	0	0
Deferrable Load	0	0
Total	1,183	100

Generator: GENSET 1 KW (Diesel)

GENSET 1 KW Electrical Summary

Quantity	Value	Units
Electrical Production	274	kWh/yr
Mean Electrical Output	0.375	kW
Minimum Electrical Output	0.375	kW
Maximum Electrical Output	0.375	kW

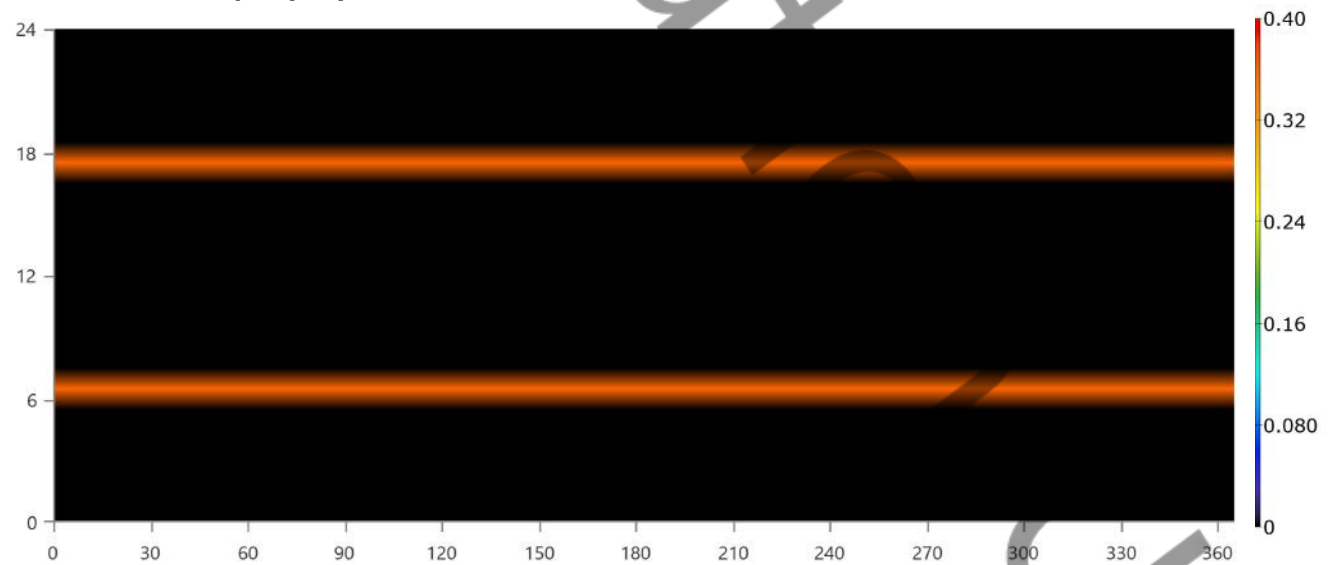
GENSET 1 KW Fuel Summary

Quantity	Value	Units
Fuel Consumption	83.8	L
Specific Fuel Consumption	0.306	L/kWh
Fuel Energy Input	824	kWh/yr
Mean Electrical Efficiency	33.2	%

GENSET 1 KW Statistics

Quantity	Value	Units
Hours of Operation	730	hrs/yr
Number of Starts	730	starts/yr
Operational Life	20.5	yr
Capacity Factor	8.33	%
Fixed Generation Cost	0.0246	\$/hr
Marginal Generation Cost	0.180	\$/kWh

GENSET 1 KW Output (kW)

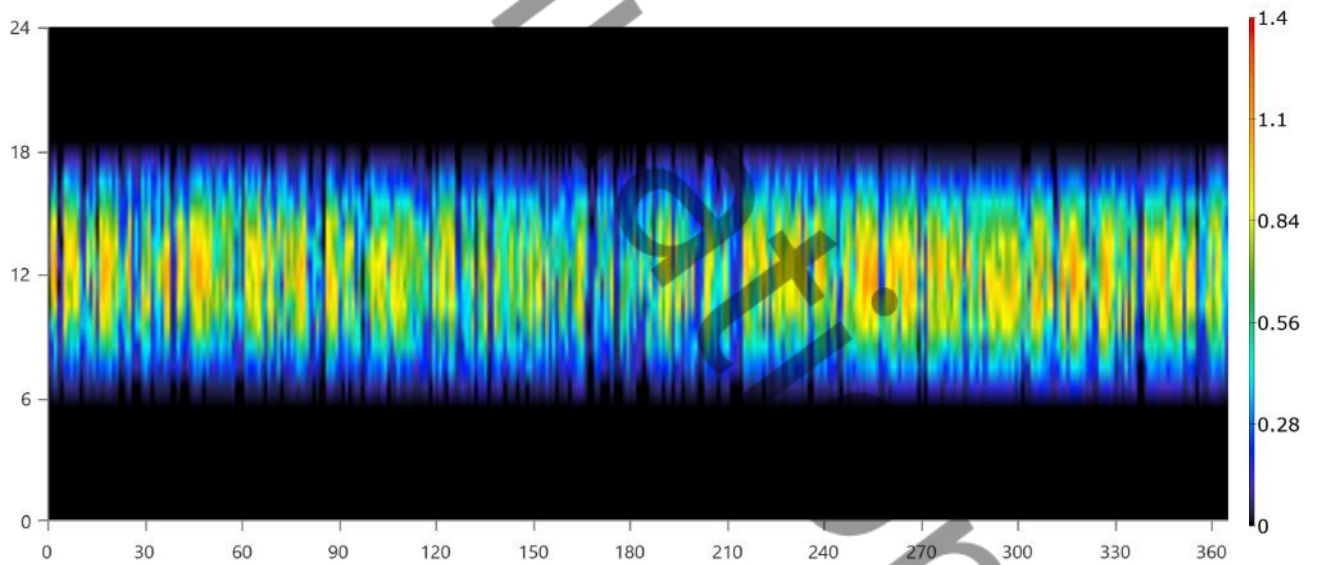


PV: VBHN330SA17
VBHN330SA17 Electrical Summary

Quantity	Value	Units
Minimum Output	0	kW
Maximum Output	1.23	kW
PV Penetration	166	%
Hours of Operation	4,380	hrs/yr
Levelized Cost	0.135	\$/kWh

VBHN330SA17 Statistics

Quantity	Value	Units
Rated Capacity	1.28	kW
Mean Output	0.224	kW
Mean Output	5.37	kWh/d
Capacity Factor	17.5	%
Total Production	1,960	kWh/yr

VBHN330SA17 Output (kW)


Storage: Generic 1kWh Lead Acid

Generic 1kWh Lead Acid Properties

Quantity	Value	Units
Batteries	10.0	qty.
String Size	1.00	batteries
Strings in Parallel	10.0	strings
Bus Voltage	12.0	V

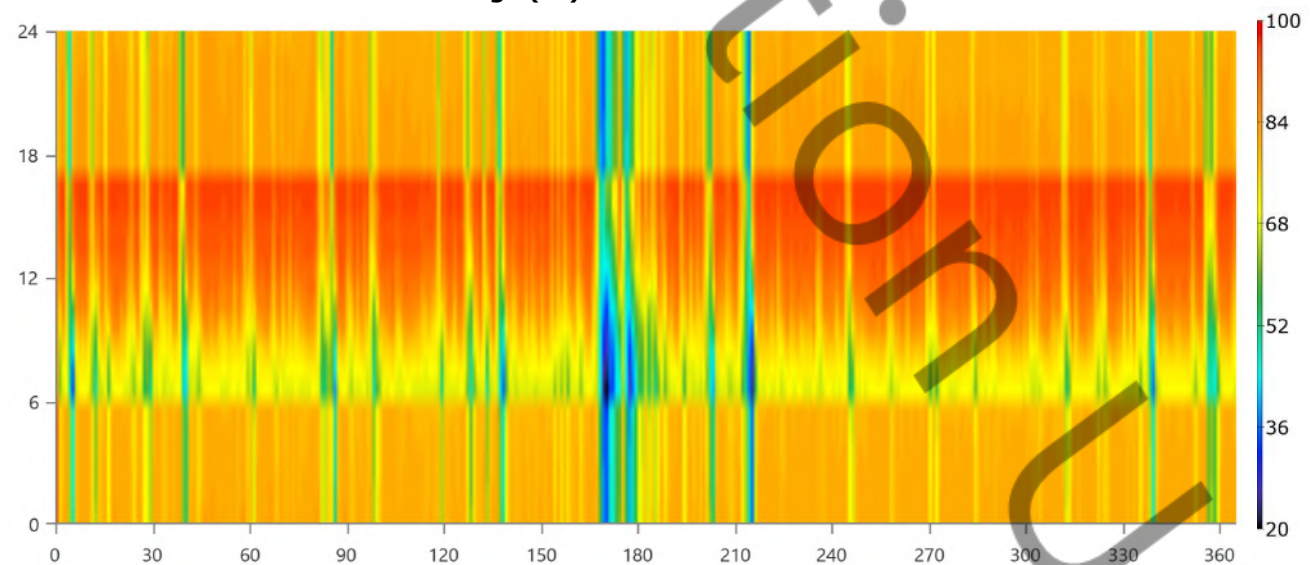
Generic 1kWh Lead Acid Result Data

Quantity	Value	Units
Average Energy Cost	0	\$/kWh
Energy In	1,124	kWh/yr
Energy Out	901	kWh/yr
Storage Depletion	1.77	kWh/yr
Losses	225	kWh/yr
Annual Throughput	1,007	kWh/yr

Generic 1kWh Lead Acid Statistics

Quantity	Value	Units
Autonomy	59.3	hr
Storage Wear Cost	0.419	\$/kWh
Nominal Capacity	10.0	kWh
Usable Nominal Capacity	8.01	kWh
Lifetime Throughput	8,000	kWh
Expected Life	7.94	yr

Generic 1kWh Lead Acid State of Charge (%)



Converter: System Converter

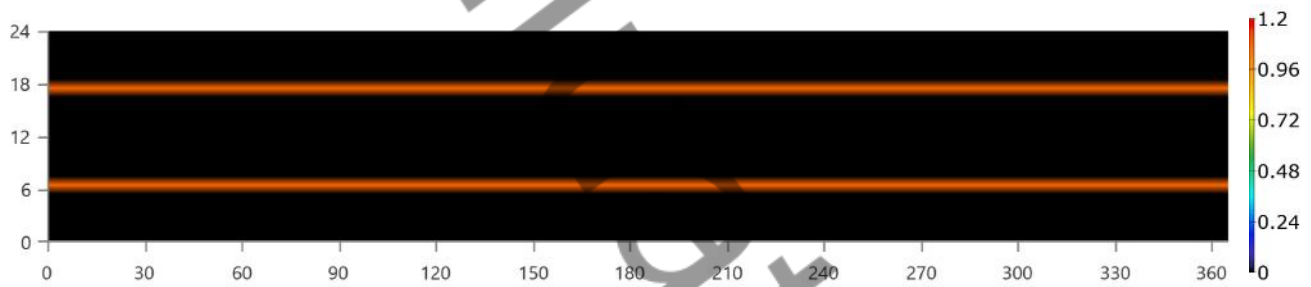
System Converter Electrical Summary

Quantity	Value	Units
Hours of Operation	5,110	hrs/yr
Energy Out	909	kWh/yr
Energy In	957	kWh/yr
Losses	47.8	kWh/yr

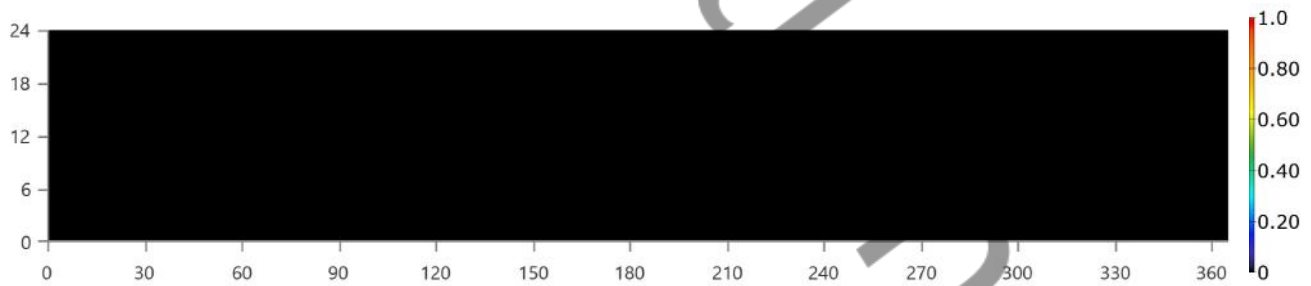
System Converter Statistics

Quantity	Value	Units
Capacity	2.00	kW
Mean Output	0.104	kW
Minimum Output	0	kW
Maximum Output	1.13	kW
Capacity Factor	5.19	%

System Converter Inverter Output (kW)



System Converter Rectifier Output (kW)

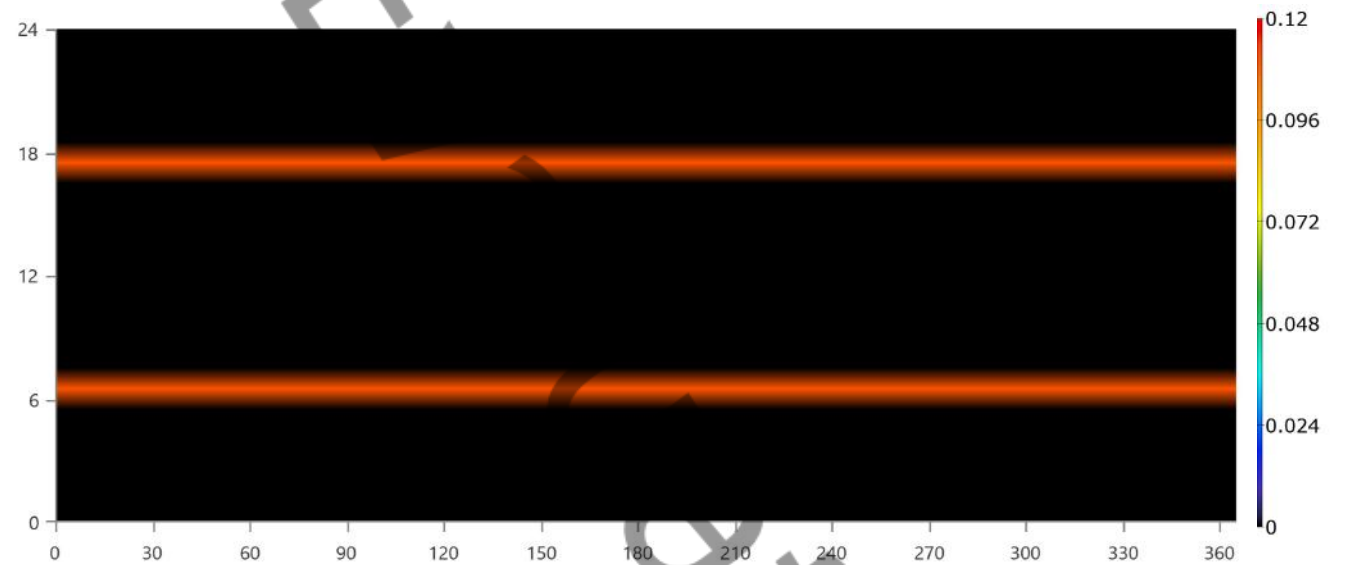


Fuel Summary

Diesel Consumption Statistics

Quantity	Value	Units
Total fuel consumed	83.8	L
Avg fuel per day	0.230	L/day
Avg fuel per hour	0.00956	L/hour

Diesel Consumption (L/hr)



Emissions

Pollutant	Quantity	Unit
Carbon Dioxide	219	kg/yr
Carbon Monoxide	1.37	kg/yr
Unburned Hydrocarbons	0.0603	kg/yr
Particulate Matter	0.00821	kg/yr
Sulfur Dioxide	0.537	kg/yr
Nitrogen Oxides	1.29	kg/yr

Compare Economics

IRR (%): **N/A**

Discounted payback (yr): **N/A**

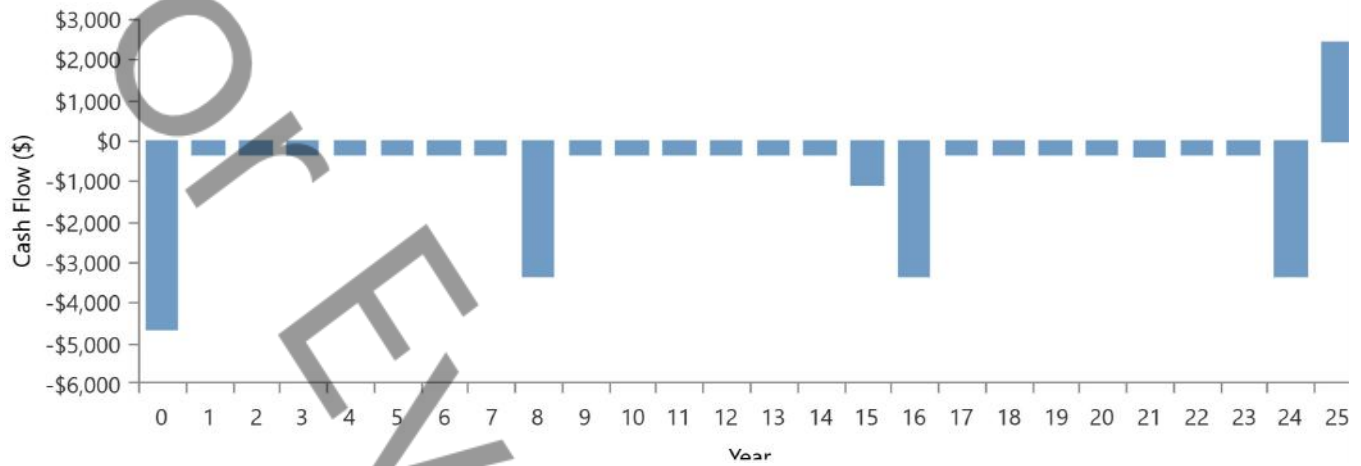
Simple payback (yr): **N/A**

	Base System	Proposed System
Net Present Cost	\$11,484	\$12,916
CAPEX	\$3,177	\$4,677
OPEX	\$642.59	\$637.37
LCOE (per kWh)	\$0.767	\$0.845
CO2 Emitted (kg/yr)	222	219
Fuel Consumption (L/yr)	84.7	83.8

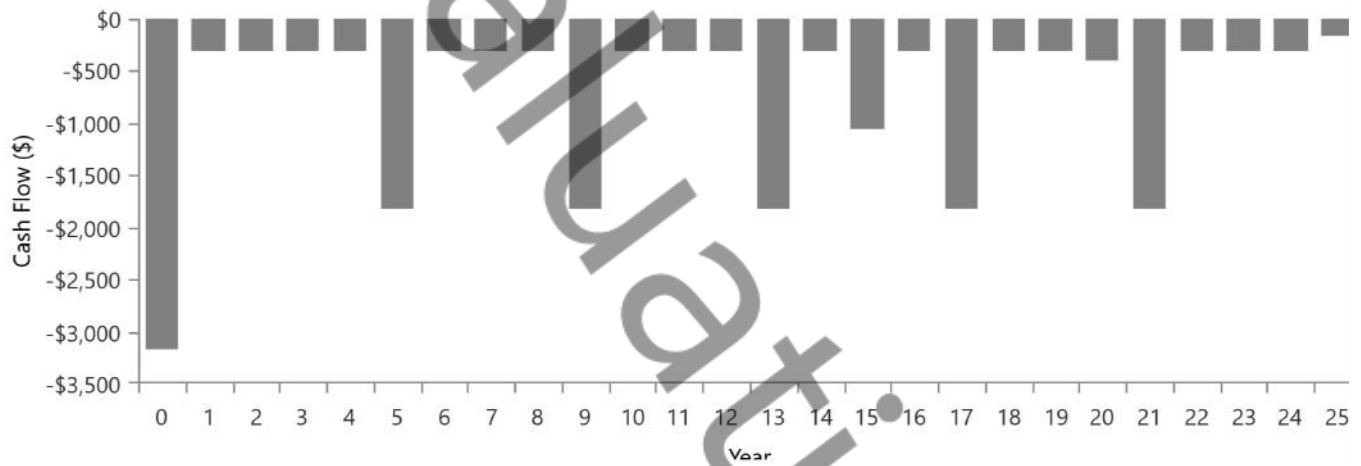
Final Evaluation on Use



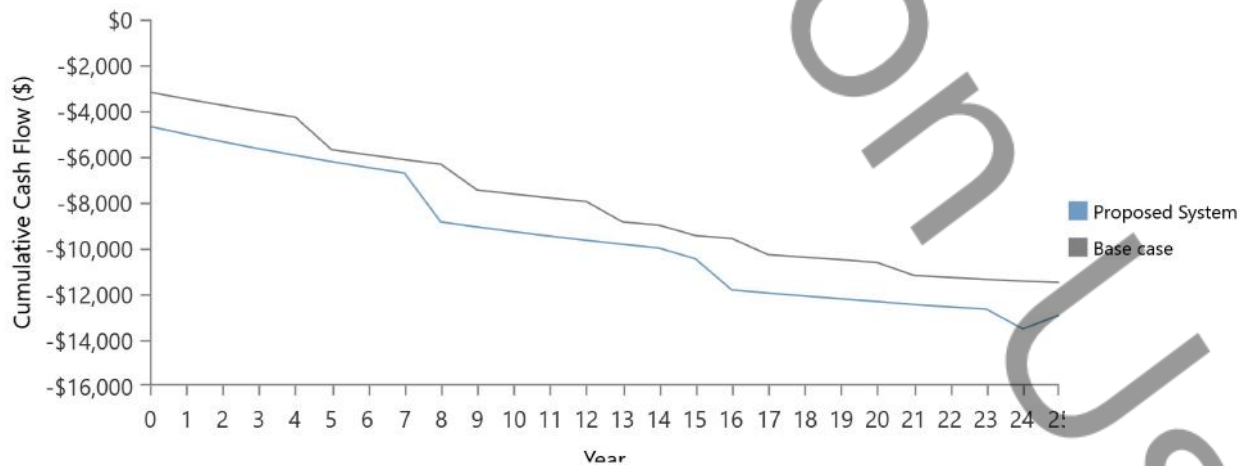
Proposed Annual Nominal Cash Flows



Base System Annual Nominal Cash Flows



Cumulative Discounted Cash Flows





HOMER
Pro

System Simulation Report



File: 100%.homer

Author: Universitas Hasanuddin

Location: Buntu Batu, Bupon, Luwu Regency, South Sulawesi, Indonesia (3°15.1'S, 120°17.1'E)

Total Net Present Cost: \$15,408.69

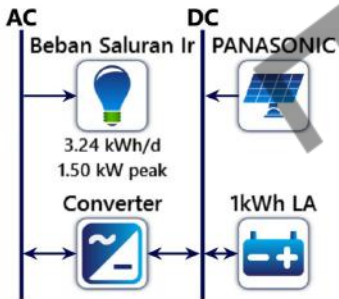
Levelized Cost of Energy (\$/kWh): \$1.01

Notes: skenario 100%

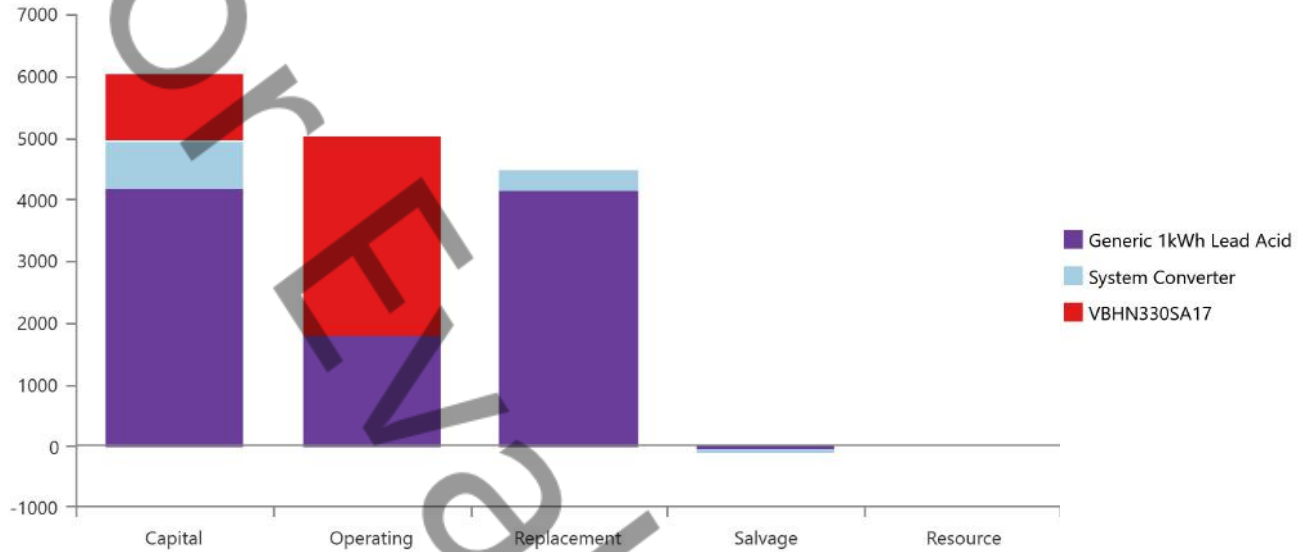
System Architecture

Component	Name	Size	Unit
PV	VBHN330SA17	1.60	kW
Storage	Generic 1kWh Lead Acid	14	strings
System converter	System Converter	2.00	kW
Dispatch strategy	HOMER Load Following		

Schematic



Cost Summary



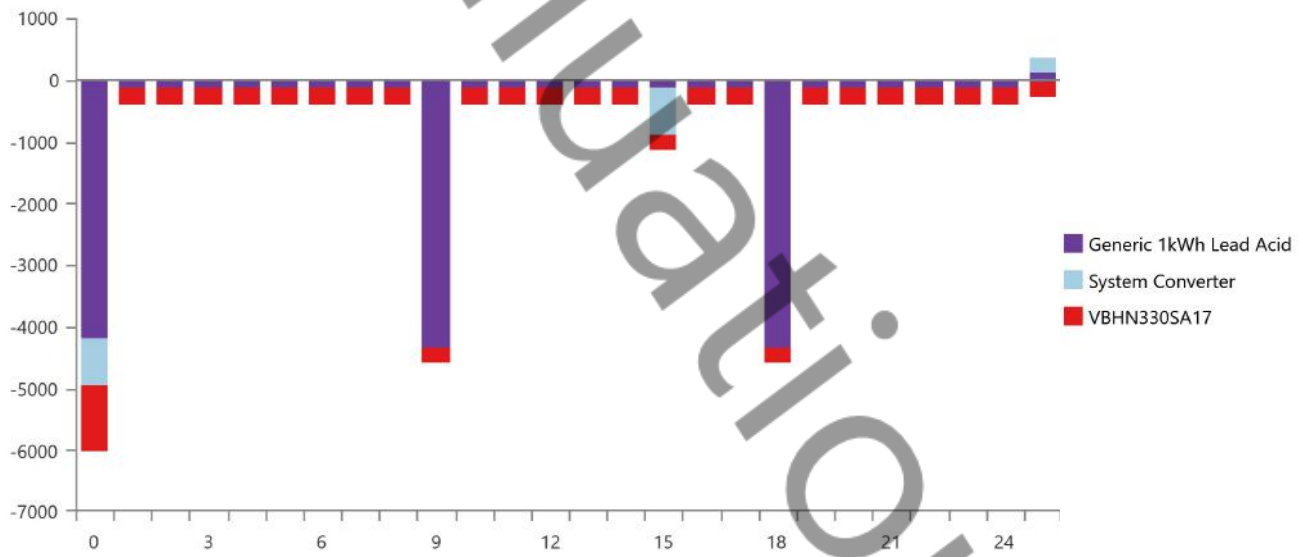
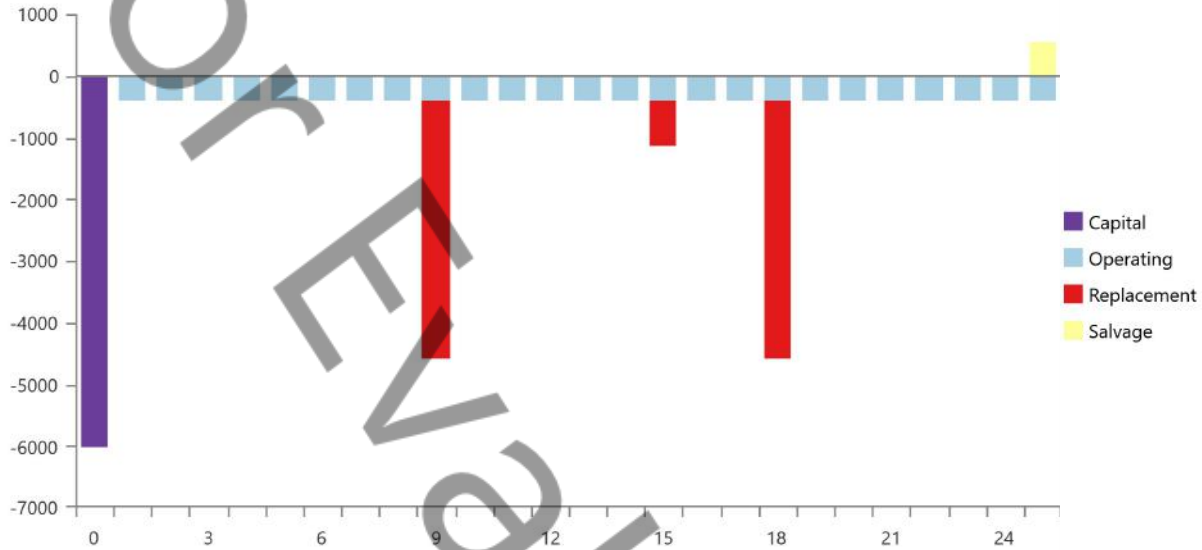
Net Present Costs

Name	Capital	Operating	Replacement	Salvage	Resource	Total
Generic 1kWh Lead Acid	\$4,200	\$1,810	\$4,165	-\$67.38	\$0.00	\$10,108
System Converter	\$751.74	\$0.00	\$318.94	-\$60.03	\$0.00	\$1,011
VBHN330SA17	\$1,058	\$3,232	\$0.00	\$0.00	\$0.00	\$4,290
System	\$6,010	\$5,042	\$4,484	-\$127.41	\$0.00	\$15,409

Annualized Costs

Name	Capital	Operating	Replacement	Salvage	Resource	Total
Generic 1kWh Lead Acid	\$324.89	\$140.00	\$322.21	-\$5.21	\$0.00	\$781.89
System Converter	\$58.15	\$0.00	\$24.67	-\$4.64	\$0.00	\$78.18
VBHN330SA17	\$81.86	\$250.00	\$0.00	\$0.00	\$0.00	\$331.86
System	\$464.90	\$390.00	\$346.89	-\$9.86	\$0.00	\$1,192

Cash Flow



Electrical Summary

Excess and Unmet

Quantity	Value	Units
Excess Electricity	914	kWh/yr
Unmet Electric Load	0	kWh/yr
Capacity Shortage	0	kWh/yr

Production Summary

Component	Production (kWh/yr)	Percent
VBHN330SA17	2,450	100
Total	2,450	100

Consumption Summary

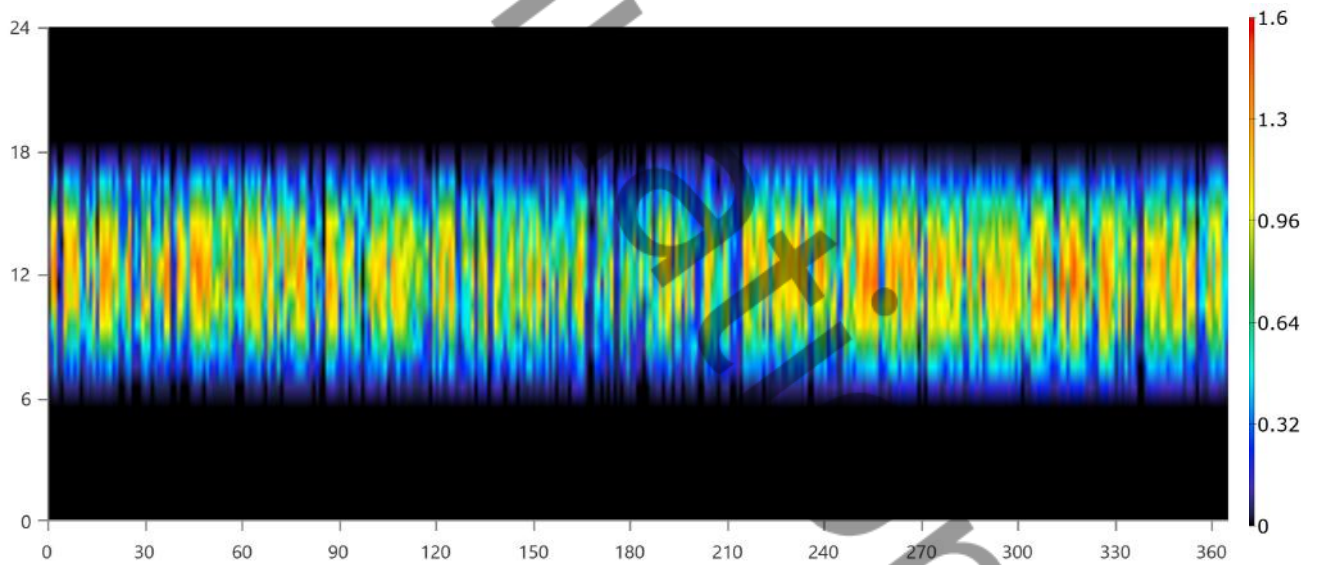
Component	Consumption (kWh/yr)	Percent
AC Primary Load	1,183	100
DC Primary Load	0	0
Deferrable Load	0	0
Total	1,183	100

PV: VBHN330SA17
VBHN330SA17 Electrical Summary

Quantity	Value	Units
Minimum Output	0	kW
Maximum Output	1.54	kW
PV Penetration	207	%
Hours of Operation	4,380	hrs/yr
Levelized Cost	0.135	\$/kWh

VBHN330SA17 Statistics

Quantity	Value	Units
Rated Capacity	1.60	kW
Mean Output	0.280	kW
Mean Output	6.71	kWh/d
Capacity Factor	17.5	%
Total Production	2,450	kWh/yr

VBHN330SA17 Output (kW)


Storage: Generic 1kWh Lead Acid

Generic 1kWh Lead Acid Properties

Quantity	Value	Units
Batteries	14.0	qty.
String Size	1.00	batteries
Strings in Parallel	14.0	strings
Bus Voltage	12.0	V

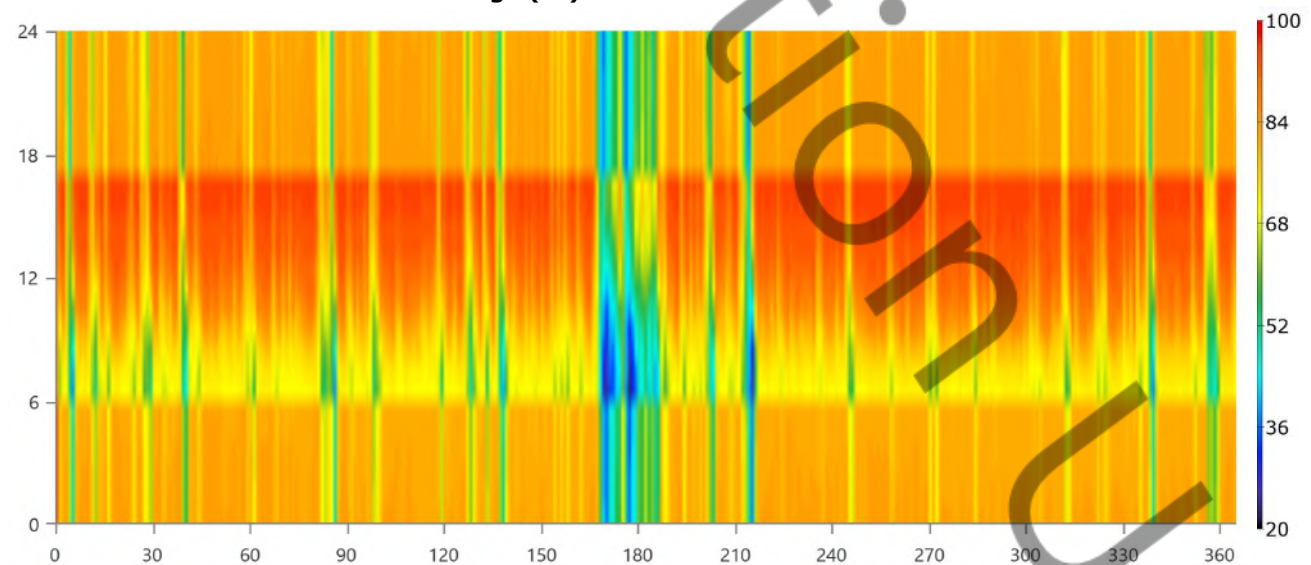
Generic 1kWh Lead Acid Result Data

Quantity	Value	Units
Average Energy Cost	0	\$/kWh
Energy In	1,466	kWh/yr
Energy Out	1,175	kWh/yr
Storage Depletion	2.38	kWh/yr
Losses	294	kWh/yr
Annual Throughput	1,314	kWh/yr

Generic 1kWh Lead Acid Statistics

Quantity	Value	Units
Autonomy	83.0	hr
Storage Wear Cost	0.419	\$/kWh
Nominal Capacity	14.0	kWh
Usable Nominal Capacity	11.2	kWh
Lifetime Throughput	11,200	kWh
Expected Life	8.52	yr

Generic 1kWh Lead Acid State of Charge (%)



Converter: System Converter

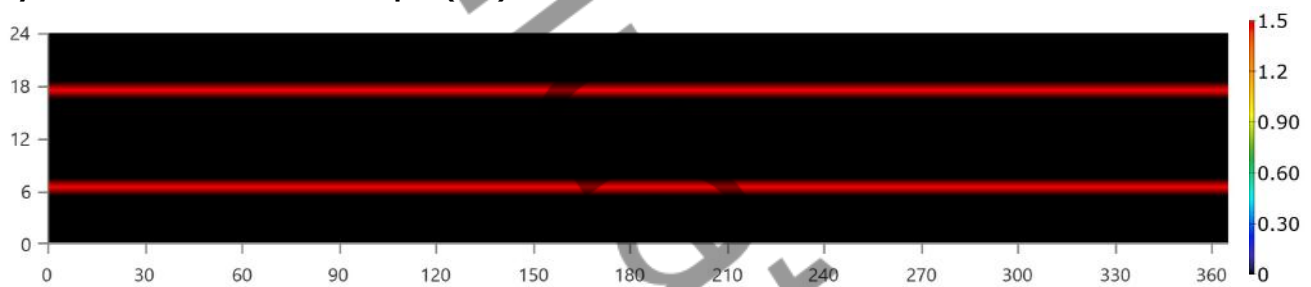
System Converter Electrical Summary

Quantity	Value	Units
Hours of Operation	5,110	hrs/yr
Energy Out	1,183	kWh/yr
Energy In	1,245	kWh/yr
Losses	62.2	kWh/yr

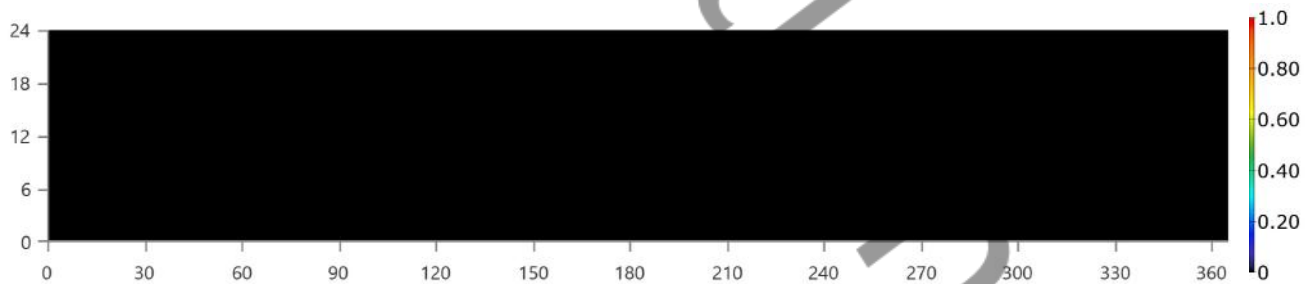
System Converter Statistics

Quantity	Value	Units
Capacity	2.00	kW
Mean Output	0.135	kW
Minimum Output	0	kW
Maximum Output	1.50	kW
Capacity Factor	6.75	%

System Converter Inverter Output (kW)



System Converter Rectifier Output (kW)





Compare Economics

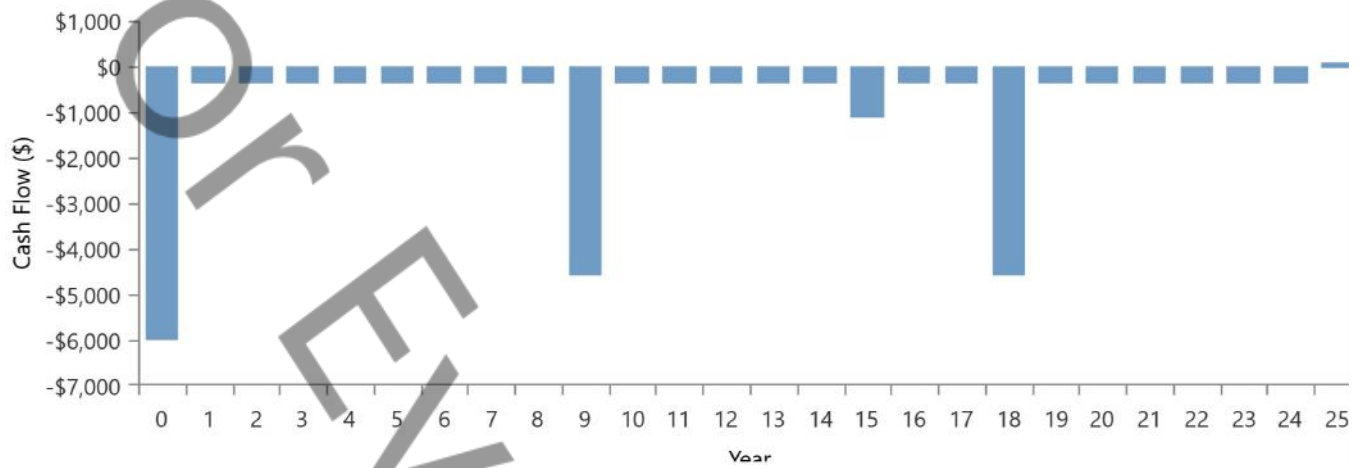
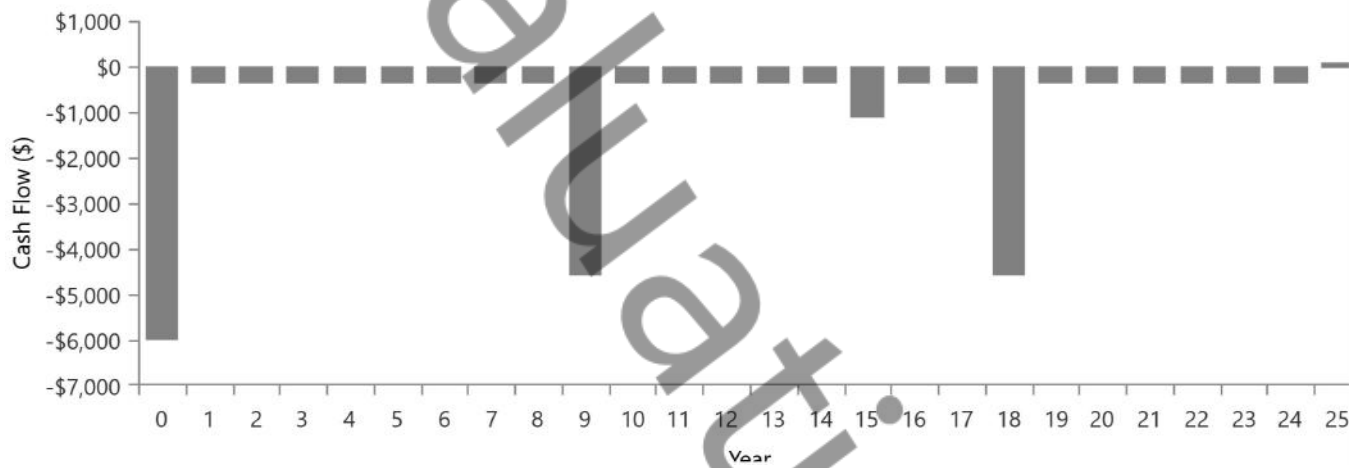
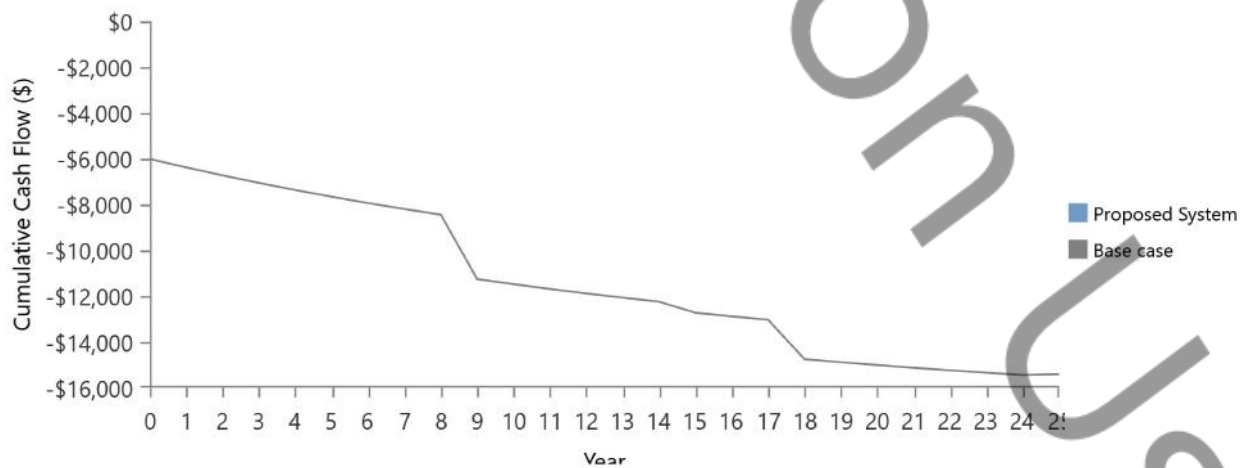
IRR (%): **N/A**

Discounted payback (yr): **N/A**

Simple payback (yr): **N/A**

	Base System	Proposed System
Net Present Cost	\$15,409	\$15,409
CAPEX	\$6,010	\$6,010
OPEX	\$727.03	\$727.03
LCOE (per kWh)	\$1.01	\$1.01
CO2 Emitted (kg/yr)	0	0
Fuel Consumption (L/yr)	0	0

Simulation Evaluation Nuse

Proposed Annual Nominal Cash Flows

Base System Annual Nominal Cash Flows

Cumulative Discounted Cash Flows


Genset

<https://www.tokopedia.com/zalikaalshop/multipro-gg16004sw-mesin-genset-1000-watt-generator-1-kw-1kw-gg1600?whid=0>

SPESIFIKASI

EXPERT SERIES

- RATE / MAX POWER OUTPUT : 1.0 KW / 1.1 KW
- TYPE : 4 STROKE
- FUEL CONSUMPTION : 1,0 LTR / HOUR
- PHASE : SINGLE PHASE
- STARTING SYSTEM : RECOIL
- RATED OUTPUT : 1000 WATT
- VOLTAGE : 220 V
- FREQUENCY : 50 Hz
- ENGINE : 3.5 HP SINGLE CYLINDER
4 STROKE, AIR COOLED
- FUEL : GASOLINE
- TANK : 5.5 Ltr
- DIMENSION : 45.5 x 36.8 x 36.5
- NETT WEIGHT : 26.5 Kg
- GROSS WEIGHT : 27.7 Kg

The screenshot shows a Tokopedia product listing for a MultiPro GG16004SW generator. The page features a search bar at the top with the Tokopedia logo and a search icon. Below the search bar, there are navigation links for various categories like 'Jas Hujan Anak', 'Wireless Charger', etc. The main product image is a yellow and black generator with 'MultiPro GG-1600/4 SW' printed on it. Below the main image is a smaller image of the generator with the text 'GASOLINE GENERATOR GG 1600/4 SW'. To the right of the images, the product title is 'MULTIPRO GG16004SW MESIN GENSET 1000 WATT GENERATOR 1 KW 1KW GG1600'. The price is listed as 'Rp3.060.000' with a 'Kredivo' logo and a note 'Cicilan mulai Rp338.385'. The quantity is set to '1' with a plus sign and a note 'Mn. pembelian tips: Tulis catatan untuk penjual'. The product information table shows 'Berat: 50000gr', 'Kondisi: Baru', 'Asuransi: Ya', and 'Etalase: Alat Alas'. The location is 'Jakarta Barat, Cengkareng' and the price is 'Mulai dari Rp450.000'.

tokopedia Kategori:

Jas Hujan Anak | Wireless Charger | Smart Watch | Sepatu Anak | Charger iPhone | Samsung A20

Home > Pertukangan > Perlengkapan Listrik > Penghemat Listrik >

MultiPro

MultiPro GG-1600/4 SW

MultiPro
GASOLINE GENERATOR
GG 1600/4 SW

Power Merchant
MULTIPRO GG16004SW MESIN GENSET 1000 WATT GENERATOR 1 KW 1KW GG1600

Jadilah Yang Pertama Mengulas Produk Ini 🌟 • 1 x Dilihat

HARGA **Rp3.060.000**
Cicilan mulai Rp338.385
Lihat semua metode

JUMLAH **1** Min. pembelian tips:
Tulis catatan untuk penjual

INFO PRODUK Berat: **50000gr** Kondisi: **Baru** Asuransi: **Ya** Etalase: **Alat Alas**

LOKASI **Jakarta Barat, Cengkareng**

Mulai dari Rp450.000 🌐


Inverter

<https://www.tokopedia.com/kadetiraipintu/hybrid-inverter-gf1000-1000w-1kw-1kva?whid=0>

tokopedia Kategori

Jas Hujan Anak Wireless Charger Smart Watch Sepatu Anak Charger Iphone Samsung A20

Home > Elektronik > Perangkat Elektronik Lainnya > Lainnya



Power Merchant

Hybrid Inverter GF1000 1000W 1KW 1KVA

Jadilah Yang Pertama Mengulas Produk Ini ✨ • 222 x Dilihat

HARGA **Rp5.500.000**

redivo Cicilan mulai **Rp608.209**
Lihat semua metode

JUMLAH 1 Min. pembelian 1pcs.

Tulis catatan untuk penjual

INFO PRODUK

Berat	Kondisi	Asuransi	Etalase
22Kg	Baru	Ya	Peralatan Listrik Tenaga Surya

ONGKOS KIRIM Ke **Jakarta Barat, Cengkareng** Mulai dari **Rp198.000**

Product Characteristics

Model No.	TPL310MB-60	TPL320MB-60
Warranty		
Product Warranty	12 Years	
Power Warranty	12 Years of 91.2% Output Power, 25 Years of 82.5% Output Power, 30 Years of 80.2% Output Power	
Electrical Data at STC		
Maximum Power (Pmax)	310 Wp	320 Wp
Voltage at Maximum Power (Vmpp)	33 V	33.4 V
Current at Maximum Power (Impp)	9.4 A	9.59 A
Open Circuit Voltage (Voc)	40.5 V	40.9 V
Short Circuit Current (Isc)	9.92 A	10.15 A
Panel Efficiency	18.58 %	19.18 %
Power Tolerance (Positive)	+ 5 %	+ 5 %
<i>Standard Test Conditions (STC): air mass AM 1.5, irradiance 1000W/m², cell temperature 25°C</i>		
Material Data		
Panel Dimension (H/W/D)	1640x992x35 mm	
Weight	18 kg	
Cell Type	PERC	
Cell Size	156×156 mm	
Cell Number	60	
Glass Type	Anti-reflection Coating	
Glass Thickness	3.2 mm	
Encapsulant Type	EVA	
Back Cover Type	TPT	
Frame Type	Anodized Aluminium Alloy	
Junction Box Diodes	3	
Junction Box Protection Class	IP 67	
Connector Type	MC4	
Cable Crosssection	4 mm ²	
Cable Length	900 mm	

S3 SERIES MPPT SOLAR CHARGE CONTROLLER

FOR MODELS: S3-30A, S3-40A, S3-50A, S3-60A

Reminder: The controllers can be installed indoor only.

Main Features

30A/40A/50A/60A MPPT solar charge controller

MPPT technology

Built-in DSP controller with high performance

Automatic battery voltage detection for 12V/24V/36V/48V

3-stage charging optimizes battery performance

Overcharge protection, Input PV polarity reverse protection, Output limited current protection, Over-temperature protection

Suitable for battery types such as sealed lead acid, vented gel and lithium battery, etc

Easy to be mounted

Warning and Caution

Be aware that only qualified professionals could install these controllers. Please read all manuals before installing them.

- 1) Keep controller away from water. Don't use wet towel to wipe controller.
- 2) Keep controller in an environmental temperature from -22°C~+55°C. Avoid direct sunlight.
- 3) Keep good heat dissipation.
- 4) Use the pure copper wires and connect all polarity correctly.
- 5) The load output is only for DC load less 5A current.
- 6) Please don't set any parameters if you are not professional since the controller can work fine in default condition except lithium battery.

PV Module Requirement

Models: S3-30A, S3-40A, S3-50A, S3-60A		S3-30A	S3-40A	S3-50A	S3-60A
Maximum PV Module Power	For 12V Battery	400W	480W	600W	720W
	For 24V Battery	720W	960W	1200W	1440W
	For 36V Battery	1000W	1400W	1800W	2100W
	For 48V Battery	1200W	1700W	2200W	2800W
PV Module Open Circuit Voltage (Voc)	For 12V Battery	DC20V~DC80V			
	For 24V Battery	DC37V~DC105V			
	For 36V Battery	DC50V~DC160V			
	For 48V Battery	DC72V~DC160V			

Notes: Voc is 1.5 or 2 times than battery voltage, then it's best efficiency. Please choose the PV modules with right Voc.

Air Circuit Breaker and Wires Requirement

Models	S3-30A	S3-40A	S3-50A	S3-60A
Copper wires	6mm ²	6mm ²	6mm ² x2PCS	6mm ² x2PCS
Air circuit breakers	63A	63A	63A	100A

Reminder

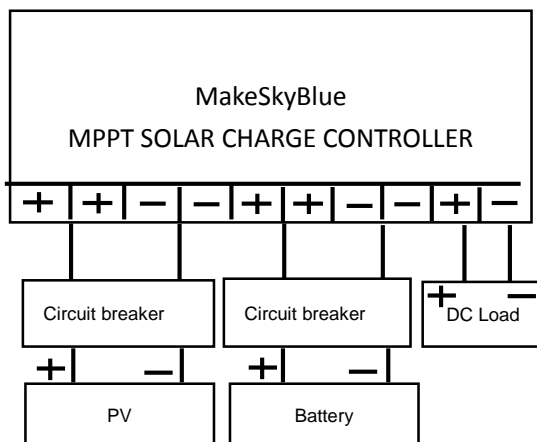
For S3-30A and S3-40A, you can connect one wire to one PV+ and another wire to one PV-.

For S3-50A and S3-60A, it's better to connect two wires to two PV+ and another two wires to two PV-.

For BAT+ and BAT-, it's same way to connect wires.

Installation steps

1. The battery voltage should be more than 12V, then the controller can boot up. Install air circuit breaker between controller and batteries. Turn off the circuit breaker, then connect batteries to controller with correct polarity.
2. Install air circuit breaker between controller and PV modules. Turn off the circuit breaker, and ensure the PV polarity correct, then connect wires between PV modules and controller.
3. Turn on the air circuit breaker between controller and batteries.
4. Turn on the air circuit breaker between controller and PV modules.
5. The controller goes into the self-test mode. Its LCD displays the parameters if all is correct. And RUN lamp (under the fan inside of casing) will flash every one second. If the controller is no response, please read full manual again for reinstalling or contact us for help.



LCD display

Item	Description
1	PV voltage / Output power
2	Battery voltage / Charging current
3	Working mode / Temperature
4	Protection mode

Working mode

3.0	Night mode, no charging
4.0	MPPT mode
7.0	Absorption mode
8.0	Floating mode

Troubleshooting

Code	Description	How to solve
18	Input PV voltage is low	Increase the PV voltage
60	Over-temperature protection	Fan will work and temperature reduction automatically
63	Battery voltage is high	Battery high voltage protection and wait for recovery
65	Battery voltage is low	Battery over-discharge and wait for recovery
71	Input PV voltage is high	Decrease the PV voltage
73	Over-charging current	Decrease the PV power

Basic Parameter

Models	S3-30A	S3-40A	S3-50A	S3-60A
Charging mode	3-stage: constant current(MPPT), constant voltage, floating			
Battery voltage automatic recognition: 12V Battery	DC9V~DC15V			
Battery voltage automatic recognition: 24V Battery	DC18V~DC29V			
Battery voltage automatic recognition: 36V Battery	DC30V~DC39V			
Battery voltage automatic recognition: 48V Battery	DC40V~DC60V			
Overcharging protection voltage	15V	30V	45V	60V
Limited current protection	31A	42A	51A	61A
Max efficiency	≥98.1%			
PV utilization	≥99%			
Protection function				
Temperature protection	75°C			
Fan-on temperature	>45°C			
Fan-off temperature	<40°C			
Properties				
Size (mm)	214x115x50			
Net weight(Kg)	1.1			
Gross weight(Kg)	1.2			
Electromagnetic compatibility	Accord to EN61000, EN55022, EN55024			
Enclosure	IP21			
Environmental temperature	-20°C ~ +55°C			
Storage temperature	-40°C ~ +75°C			

Manual Setting

Reminder: The controller will work fine under default setting except lithium battery.



Caution! All steps must be carried out when the PV modules are disconnected to controller.

Step 1: D00

Press the button PRG, then LCD displays D00. This is setting for load working time (Default is 24-hour). Press ENT until numbers flash, then press UP/DOWN to set up time that you want, long-press ENT to confirm it. This output voltage is same as battery. The load is only for small DC loads less 5A current. If no load, just leave it.

Step 2: D01

Press the button UP, LCD shows 13.8. This is default value of floating charging. Press ENT until numbers flash, then press UP/DOWN to set up voltage that you want, long-press ENT to confirm it.



Caution! This value is for one 12V battery. If there are many batteries in series, the controller will multiply them in proportion automatically and the LCD only displays the voltage of one battery (For example, if your battery is 4x12V, and if you set the voltage at 14.1, the charge voltage will be 4x14.1 automatically, but the LCD only displays 14.1).

Step 3: D02

Continue to press the button UP, LCD shows 14.5. This is highest absorption charging voltage for battery. Press ENT until numbers flash, then press UP/DOWN to set up voltage that you want, long-press ENT to confirm it.



Caution! This value is for one 12V battery. If there are many batteries in series, the controller will multiply them in

proportion automatically and the LCD only displays the voltage of one battery.

Step 4: D03

Continue to press the button UP, LCD shows 10.0. This is protection value of battery discharge. Press ENT until numbers flash, then press UP/DOWN to set up voltage that you want, long-press ENT to confirm it.

It means it's protected when 12V battery is less 10.0V and there is no output power from OU+ and OU-.

Step 5: D04

Continue to press the button UP, LCD shows 00. 00 is default for acid batteries.

If it's for lithium battery, please press ENT until numbers flash, then press UP/DOWN to choose 01, long-press ENT to confirm it. Step 2 (D01) is no useful when you choose 01 for lithium battery. And the voltage set in step 3 (D02) will be highest charging voltage for lithium battery.

Press ESC to exit the setting menu.

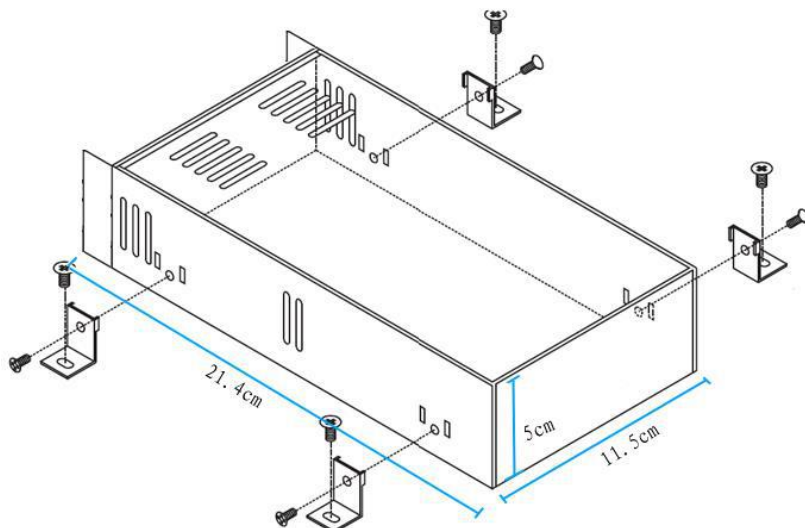
Reminder: When you set up all steps, please disconnect battery. And reconnect controller to see if all setting is successful.

When all setting is ok, then connect PV modules to controller.

Batteries charge voltage reference

Battery Type	Absorption Voltage (Constant voltage)			Floating Voltage		
	12V	24V	48V	12V	24V	48V
Vented	14.2V	28.6V	57.2V	13.2V	26.4V	52.80V
Sealed	14.4V	28.8V	57.6V	13.8V	27.6V	55.2V
Gel	14.4 V	28.8V	57.6V	13.8V	27.6V	55.2V
NiCd	14.2V	28.6V	57.2V	14.0V	28.0V	56.0V
Lithium or Others	Defined by users					

Dimension



Notes: Please use our screws only since it may damage the internal PCB if using other screws.

Please use proper torque to push the screws into casing since it may damage the internal PCB by strong torque.

Content Included

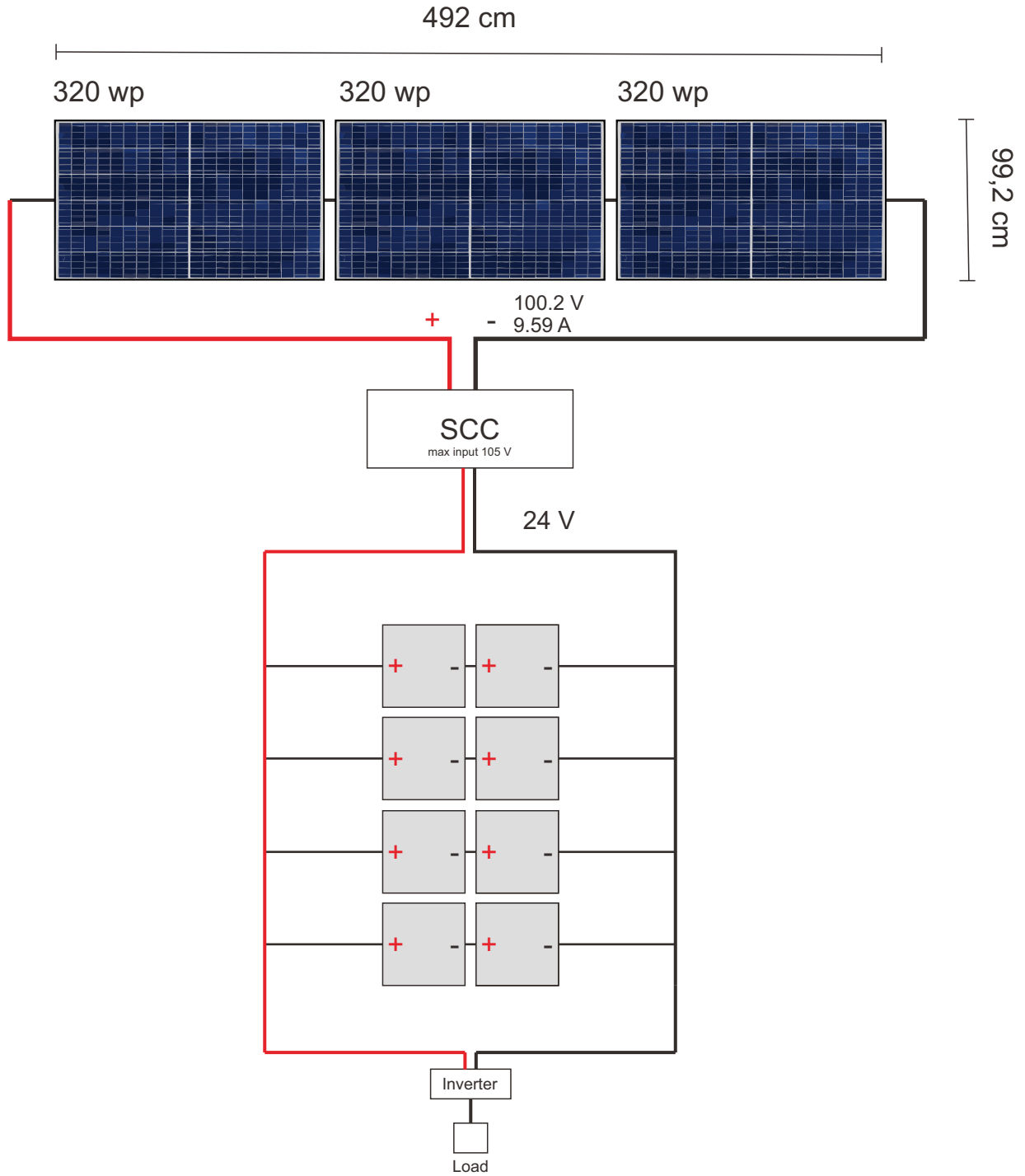
1 Controller 1 English manual 4 Corner connections 4 Screws for controller casing

Photos



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Shenzhen Guangdong 518101
China
Tel: 86 755 2331 3263
www.makeskyblue.com
sales@makeskyblue.com

SUSUNAN PANEL DAN BATERAI SISTEM OPTIMAL



PEMASUKAN DARI PERKEBUNAN

Year	Income	cashflow	CF-income (NCF)	NCF kumulatif	DF			NPV			Benefit			Cost		
					3,75%	21%	22%	3,75%	21%	22%	3,75%	21%	22%	3,75%	21%	22%
0	0,00	52829300,00	-52829300,00	-52829300,00	1	1	1	-52829300,00	-52829300,00	-52829300,00	0	0	0	52829300,00	52829300,00	52829300,00
1	0,00	5031500,00	-5031500,00	-57860800,00	0,963855	0,826446	0,819672	-4849638,554	-4124180,33	-4124180,33	0	0	0	4849638,55	4158264,46	4124180,328
2	0,00	5031500,00	-5031500,00	-62892300,00	0,929017	0,683013	0,671862	-4674350,414	-3436582,2	-3380475,68	0	0	0	4674350,41	3436582,2	3380475,679
3	0,00	5031500,00	-5031500,00	-67923800,00	0,895438	0,564474	0,550707	-4503397,989	-2840150,58	-2770881,7	0	0	0	4503397,99	2840150,58	2770881,704
4	54027000,00	5031500,00	48995500,00	-18928300,00	0,863073	0,466507	0,451399	42286697,84	22856762,3	221116524	46629250,12	25203994,23	24387738,53	4342552,28	2347231,88	2271214,511
5	54027000,00	5031500,00	48995500,00	30667200,00	0,831878	0,365543	0,369999	40758262,98	18889886,2	18128298,4	44943855,53	20829747,3	19989949,61	4185592,56	1939861,06	1861651,239
6	54027000,00	5031500,00	48995500,00	79062700,00	0,80181	0,318631	0,303278	39285072,75	15611476,2	14859261	43319378,83	17214667,19	16385204,6	4034306,08	1603190,96	1525943,638
7	54027000,00	5031500,00	48995500,00	128058200,00	0,772829	0,263331	0,248589	37865130,36	12902046,5	12179722,1	41753618,15	14226997,68	13430495,57	3888487,79	1324951,21	1250773,474
8	54027000,00	35481500,00	18545500,00	146603700,00	0,744895	0,217629	0,203761	13814453,33	4036041,14	3778852,16	40244451,23	11757849,32	11008602,93	26429997,9	7721808,18	7229750,77
9	54027000,00	5031500,00	48995500,00	195599200,00	0,717971	0,179859	0,167017	35177360,18	8812271,34	8183097,35	38789832,51	9717230,842	9023445,024	3612472,32	904959,501	840347,6713
10	54027000,00	5031500,00	48995500,00	244594700,00	0,69202	0,148644	0,136899	33905889,33	7282868,88	6707456,85	37387790,37	8030769,291	7396266,413	3481901,04	747900,414	688809,5667
11	54027000,00	5031500,00	48995500,00	293590200,00	0,667008	0,122846	0,112213	32680375,26	6018899,9	5497915,45	36036424,45	6636999,414	6062513,454	3356049,19	618099,516	564598,0055
12	54027000,00	5031500,00	48995500,00	342585700,00	0,642899	0,101526	0,091978	31499156,88	4974297,44	4506488,07	34733903,09	5485123,483	4969273,323	3234746,21	510826,046	462785,2504
13	54027000,00	5031500,00	48995500,00	391581200,00	0,619662	0,083905	0,075391	30360633,14	4110989,62	3693842,68	33478460,81	4533159,903	4073174,855	3117827,67	422170,286	379332,1724
14	54027000,00	5031500,00	48995500,00	440576700,00	0,597264	0,069343	0,061796	29263260,85	3397512,08	3027739,9	32266395,96	3746413,143	3338667,914	3005135,1	348901,063	310928,0102
15	54027000,00	15931730,00	38095270,00	478671970,00	0,575676	0,057309	0,050653	21930547,56	2183184,81	1929628,02	31102068,39	3096209,209	2736613,044	9171520,83	913024,398	806985,0284
16	54027000,00	35481500,00	18545500,00	497217470,00	0,554869	0,047362	0,041519	10290319,53	878360,145	769983,211	29977897,25	2558850,586	2243125,446	19687577,7	1680490,44	1473142,235
17	54027000,00	5031500,00	48995500,00	546212970,00	0,534813	0,039143	0,034032	26203445,61	1917807	1667397,22	28894358,79	2114752,551	1838627,415	2690913,18	196945,554	171230,1967
18	54027000,00	5031500,00	48995500,00	595208470,00	0,515483	0,032349	0,027895	25256333,12	1584964,46	1366719,03	27849984,38	1747729,381	1507071,651	2593651,26	162764,921	140352,6202
19	54027000,00	5031500,00	48995500,00	644203970,00	0,496851	0,026735	0,022865	24343453,61	1309887,98	1120261,5	26843358,44	1444404,447	1235304,632	2499904,82	134516,464	115043,1313
20	54027000,00	5031500,00	48995500,00	693199470,00	0,478892	0,022095	0,018741	23463569,75	1082552,05	918247,132	25873116,56	1193722,683	1012544,781	2409546,82	111170,631	94297,64864
21	54027000,00	7303795,00	46723205,00	739922675,00	0,461583	0,01826	0,015362	21566636,21	853178,395	717754,926	24937943,68	986547,6721	829954,7381	3371307,46	133369,277	112199,8124
22	54027000,00	5031500,00	48995500,00	788918175,00	0,444899	0,015091	0,012592	21798061,6	739397,618	616935,724	24036572,22	680290,769	2238510,62	75931,0368	63355,04477	51930,36457
23	54027000,00	5031500,00	48995500,00	837913675,00	0,428819	0,012472	0,010321	21010179,86	611072,411	505685,02	23167780,45	673825,3344	557615,3844	2157600,59	62752,923	300169,1362
24	54027000,00	35481500,00	18545500,00	856459175,00	0,413319	0,010307	0,00846	7665209,294	191156,759	156892,654	2230390,8	457061,7905	14665181,5	365723,682	300169,1362	300169,1362
25	54027000,00	-26921135,00	80948135,00	937407310,00	0,39838	0,008519	0,006934	32248106	689560,839	561320,729	21523268,24	460231,77	374640,8119	-10724838	-229329,07	-186679,917

3,75%	22%
NPV	450736062,1
BCR	4151016,27
PP	3,636005943
IRR	5,699297058 tahun
	3,89%



Penggunaan **BI 7-Day Repo Rate** sebagai suku bunga acuan berlaku mulai tanggal 19 Agustus 2016. sebelum periode tersebut, suku bunga acuan menggunakan **BI Rate**.

Tanggal	BI 7-Day	Siaran Pers
19 Nopember 2020	3.75 %	Pranala Siaran Pers
13 Oktober 2020	4.00 %	Pranala Siaran Pers
17 September 2020	4.00 %	Pranala Siaran Pers
19 Agustus 2020	4.00 %	Pranala Siaran Pers
16 Juli 2020	4.00 %	Pranala Siaran Pers
18 Juni 2020	4.25 %	Pranala Siaran Pers
19 Mei 2020	4.50 %	Pranala Siaran Pers
14 April 2020	4.50 %	Pranala Siaran Pers
19 Maret 2020	4.50 %	Pranala Siaran Pers
20 Februari 2020	4.75 %	Pranala Siaran Pers
23 Januari 2020	5.00 %	Pranala Siaran Pers
19 Desember 2019	5.00 %	Pranala Siaran Pers
21 Nopember 2019	5.00 %	Pranala Siaran Pers
24 Oktober 2019	5.00 %	Pranala Siaran Pers
19 September 2019	5.25 %	Pranala Siaran Pers
22 Agustus 2019	5.50 %	Pranala Siaran Pers
18 Juli 2019	5.75 %	Pranala Siaran Pers
20 Juni 2019	6.00 %	Pranala Siaran Pers
16 Mei 2019	6.00 %	Pranala Siaran Pers
25 April 2019	6.00 %	Pranala Siaran Pers
21 Maret 2019	6.00 %	Pranala Siaran Pers
21 Februari 2019	6.00 %	Pranala Siaran Pers
17 Januari 2019	6.00 %	Pranala Siaran Pers
20 Desember 2018	6.00 %	Pranala Siaran Pers
15 Nopember 2018	6.00 %	Pranala Siaran Pers
23 Oktober 2018	5.75 %	Pranala Siaran Pers
27 September 2018	5.75 %	Pranala Siaran Pers
15 Agustus 2018	5.50 %	Pranala Siaran Pers