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OFERTĂ DE PREȚ

Oferta Nr. **0209/01**
Data: **02.09.2024**
Valabil până la: **02.11.2024**

Digitally signed by Guzun Elena
Date: 2024.09.02 14:40:31 EEST
Reason: MoldSign Signature
Location: Moldova

Beneficiar:
IP Universitatea de Stat de Medicină și Farmacie ”Nicolae Testemițanu”, (mun.Chișinău, str.N.Testemițanu 27)

Sistem fotovoltaic trifazat On-Grid 100 kW

Activitate	Cantitate	Suma (incl.TVA)
Panouri fotovoltaice Longi LR5-72HTD 580W (137 kW)	237	
Invertor (puterea totală 100 kwp) - Huawei SUN2000-50KTL-M0 with AFCI - Monitorizare ShineWiFi-X - Complex protecții (inclus) - Switch (inclus)	2	
Structură metalică, cabluri și accesorii: pentru 1079,53 - Balast de beton - Profil zincat 41*41mm - Echipament de curent DC - Clemă de capat 35 mm - Clemă intermediară mijloc - Cabluri și conectori: - Cablu PV1 F 6mm2 - Conectori MC4 - Echipament de curent AC		
Lucrări de proiectare și dare în exploatare Manopera		
Total		1 712 144,07 Lei

Toate lucrările se vor executa conform Devizului Local și Proiectului de Execuție.

Notă!

În preț se includ toate cheltuielile ce țin de : proiectare, documentare, utilaj pentru montare pe acoperiș a sistemului (panouri, invertor, contor bilateral, partea de protecție și sigurante electrice etc.), inclusiv și darea in exploatare, contract cu Premier Energy.
Achitarea se face în moneda națională (MDL) conform cursului comercial de vânzare la Euro al Băncii MAIB la data semnării contractului.

Obligațiuni și termeni de execuție a Executorului:

- Realizarea și implementarea Proiectului pâna la etapa de 100% funcționare într-un termen rezonabil cca 40 zile (de la data semnării Contractului), în condiții climaterice favorabile;
- Asumarea răspunderii cu privire la întocmirea persoanei (electrician autorizat gr.V sec.elect.) ca responsabil pe gospodărie electrică în cadrul Companiei Dvs. și cu acordul obligatoriu al Administrației Companiei Dvs. prin Ordin de angajare a persoanei respective;
- Verificarea, transmiterea și predarea întregului Sistem Electric Fotovoltaic;
- Oferirea întregului set de documentație Benefeciarului (Deviz Local, Procese Verbale, Act Primire-Predare, Talon de Garanție);
- Instalarea unui soft special de evidență și monitorizare pe dispozitivele Benefeciarului (mobil, tableta, PC, Laptop etc.);
- Monitoring a întregului Sistem Electric Fotovoltaic pe toată durata exploatării (de la distanță);
- Oferirea unui Ghid Practic de Întreținere, Curățare și Spălare a Panourilor Fotovoltaice.

Graficul de implementare a proiectului:

- Lucrări de construcție
- Lucrări de montarea modulelor fotovoltaice
- Lucrări de conectare a echipamentului electric

Numărul de contracte similare, executate în ultimii ani – peste 200 (inclusiv proiecte de Stat)
Puterea totală a proiectelor executate în ultimii ani – peste 28 MW
Numărul de persoane care va fi încadrat în realizarea proiectului – 6 + personal la tehnică specială
Perioada de executare a proiectului de la data semnării contractului – l- 2 luni (în condiții climaterice favorabile)

Condiții de achitare:
0% la momentul livrării panourilor.
0% la începerea lucrărilor de instalare.
0% la darea în exploatare.

Elena GUZUN
Director

Elaborat de *Nicu Vulpe*
+373 60 88 43 88

SUN2000-50KTL-M3

Smart PV Controller

Higher Yields

Up to 30% More Energy
with Optimizer

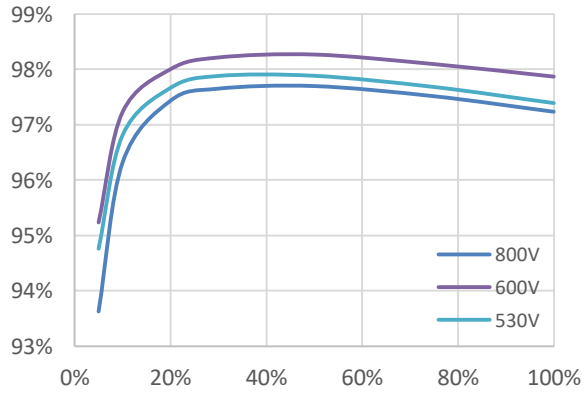
Active Safety

AI Powered
Active Arcing Protection

Flexible Communication

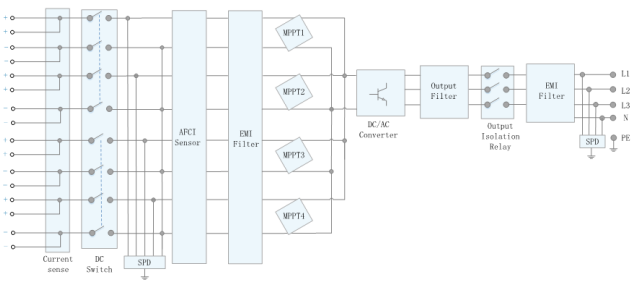
WLAN, Fast Ethernet, 4G
Communication Supported

Efficiency Curve



SUN2000-50KTL-M3

Circuit Diagram



SUN2000-50KTL-M3

Technical Specification

Technical Specification	SUN2000-50KTL-M3
Efficiency	
Max. Efficiency	98.5%
European Efficiency	98.0%
Input	
Max. Input Voltage [1]	1,100 V
Max. Current per MPPT	30 A
Max. Current per Input	20 A
Max. Short Circuit Current per MPPT	40 A
Start Voltage	200 V
MPPT Operating Voltage Range [2]	200 V ~ 1,000 V
Rated Input Voltage	600 V
Number of Inputs	8
Number of MPP Trackers	4
Output	
Rated AC Active Power	50,000 W
Max. AC Apparent Power	55,000 VA
Max. AC Active Power (cosϕ=1)	55,000 W
Rated Output Voltage	400 Vac / 480 Vac, 3W+(N) + PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Rated Output Current	72.2 A @ 400Vac, 60.1 A @ 480Vac
Max. Output Current	79.8 A @ 400Vac, 66.5 A @ 480Vac
Adjustable Power Factor Range	0.8 LG ... 0.8 LD
Max. Total Harmonic Distortion	<3%
Protection	
Input-side Disconnection Device	Yes
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
PV-array String Fault Monitoring	Yes
DC Surge Arrester	Type II
AC Surge Arrester	Type II
DC Insulation Resistance Detection	Yes
Residual Current Monitoring Unit	Yes
Arc Fault Protection	Yes
Ripple Receiver Control	Yes
Integrated PID Recovery [3]	Yes
Communication	
Display	LED Indicators, Bluetooth + APP
RS485	Yes
Smart Dongle	WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional)
Monitoring BUS (MBUS)	Yes (Isolation Transformer required)
Optimizer Compatibility	
DC MBUS Compatible Optimizer	MERC-1100/1300W-P
General Data	
Dimensions (W x H x D)	640 x 530 x 270 mm (25.2 x 20.9 x 10.6 inch)
Weight (with mounting plate)	49 kg (108.1 lb)
Operating Temperature Range	-25°C ~ 60°C (-13°F ~ 140°F)
Cooling Method	Smart Air Cooling
Max. Operating Altitude	4,000 m (13,123 ft.)
Relative Humidity	0% RH ~ 100% RH
DC Connector	Amphenol HH4
AC Connector	Waterproof Connector + OT/DT Terminal
Protection Degree	IP 66
Topology	Transformerless
Nighttime Power Consumption	≤ 5.5W
Standard Compliance (more available upon request)	
Safety	EN 62109-1/-2, IEC 62109-1/-2, EN 50530, IEC 62116, IEC 60068, IEC 61683
Grid Connection Standards	IEC 61727, VDE-AR-N4105, VDE 0126-1-1, BDEW, G59/3, UTE C 15-712-1, CEI 0-16, CEI 0-21, RD 661, RD 1699, P.O. 12.3,RD 413, EN-50438-Turkey, EN-50438-Ireland, C10/11, MEA, Resolution No.7, NRS 097-2-1, DEWA

1. The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.
2. Any DC input voltage beyond the operating voltage range may result in inverter improper operating.
3. SUN2000-30~50KTL-M3 raises potential between PV- and ground to above zero through integrated PID recovery function to recover module degradation from PID. Supported module types include: P-type (mono, poly), N-type (nPERT, HIT)
4. 50KTL Platform only supports C&I Optimizer(MERC-1100/1300W-P). The current version does not support this function and it can be upgraded to optimizer version via new inverter software version(Dec 30th, 2022) Refer to HTTP://solar.Huawei.com/

Hi-MO X6 Explorer

LR5-72HTD
560~585M

- Suitable for Distribution Market
- Simple design embodies modern style
- Better energy generation performance
- High-quality module guarantees long-term reliability

15 15-year Warranty for Materials and Processing

30 30-year Warranty for Extra Linear Power Output

Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730

ISO9001:2015: ISO Quality Management System

ISO14001: 2015: ISO Environment Management System

ISO45001: 2018: Occupational Health and Safety

IEC62941: Guideline for module design qualification and type approval

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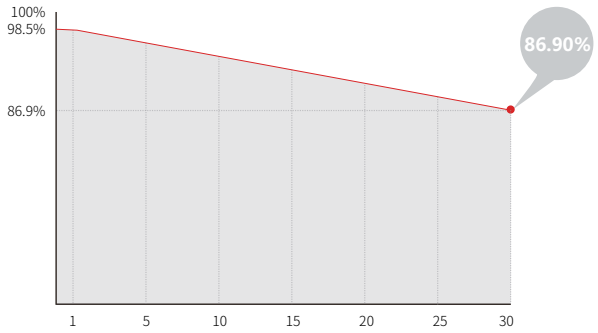
Hi-MO X6 Explorer

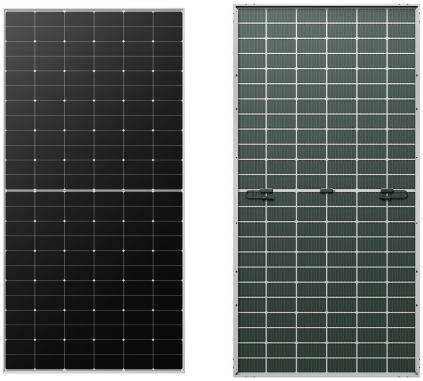
LR5-72HTD 560~585M

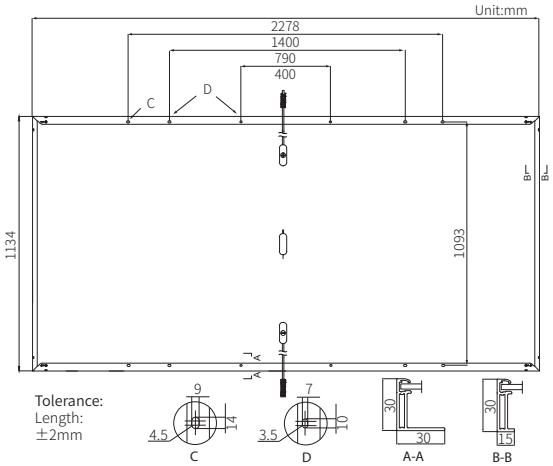
22.6%	0~3%	<1.5%	0.40%
MAX MODULE EFFICIENCY	POWER TOLERANCE	FIRST YEAR POWER DEGRADATION	YEAR 2-30 POWER DEGRADATION

Additional Value

30-Year Power Warranty







Mechanical Parameters

Cell Orientation	144 (6×24)
Junction Box	IP68
Output Cable	4mm², +400, -200mm/±1400mm length can be customized
Glass	Dual glass, 2.0mm semi-tempered glass
Frame	Anodized aluminum alloy frame
Weight	31.8kg
Dimension	2278×1134×30mm
Packaging	36pcs per pallet / 180pcs per 20' GP / 720pcs per 40' HC

Electrical Characteristics

STC : AM1.5 1000W/m² 25°C NOCT : AM1.5 800W/m² 20°C 1m/s Test uncertainty for Pmax: ±3%

Module Type	LR5-72HTD-560M		LR5-72HTD-565M		LR5-72HTD-570M		LR5-72HTD-575M		LR5-72HTD-580M		LR5-72HTD-585M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	560	418	565	422	570	426	575	430	580	433	585	437
Open Circuit Voltage (Voc/V)	51.70	48.54	51.85	48.68	52.00	48.82	52.15	48.96	52.30	49.10	52.45	49.25
Short Circuit Current (Isc/A)	13.87	11.20	13.93	11.25	14.00	11.31	14.06	11.36	14.13	11.41	14.19	11.46
Voltage at Maximum Power (Vmp/V)	43.25	39.47	43.40	39.60	43.55	39.74	43.70	39.88	43.85	40.01	44.00	40.15
Current at Maximum Power (Imp/A)	12.95	10.60	13.02	10.66	13.09	10.72	13.16	10.77	13.23	10.83	13.30	10.89
Module Efficiency(%)	21.7		21.9		22.1		22.3		22.5		22.6	

Electrical characteristics with different rear side power gain (reference to 575W front)

Pmax /W	Voc/V	Isc /A	Vmp/V	Imp /A	Pmax gain
604	52.15	14.76	43.70	13.82	5%
633	52.15	15.47	43.70	14.48	10%
661	52.25	16.17	43.80	15.13	15%
690	52.25	16.87	43.80	15.79	20%
719	52.25	17.58	43.80	16.45	25%

Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0 ~ 3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	30A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Bifaciality	60±5%
Fire Rating	IEC Class C

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.050%/°C
Temperature Coefficient of Voc	-0.230%/°C
Temperature Coefficient of Pmax	-0.290%/°C

LONGi

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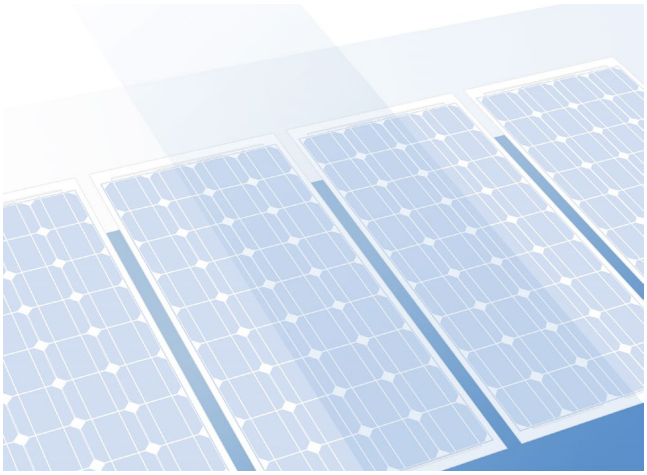
E-Mail: megawatt.nv@gmail.com

02-Sep-24

Your PV system

"Construcția centralei fotovoltaice pentru Blocul didactic Nr.1, str.Nicolae Testemițanu nr.27"



Project Overview

PV System

Grid-connected PV System

Climate Data	Chisinau, MDA (1991 - 2010)	
PV Generator Output	137.46	kWp
PV Generator Surface	612.2	m²
Number of PV Modules	237	
Number of Inverters	2	

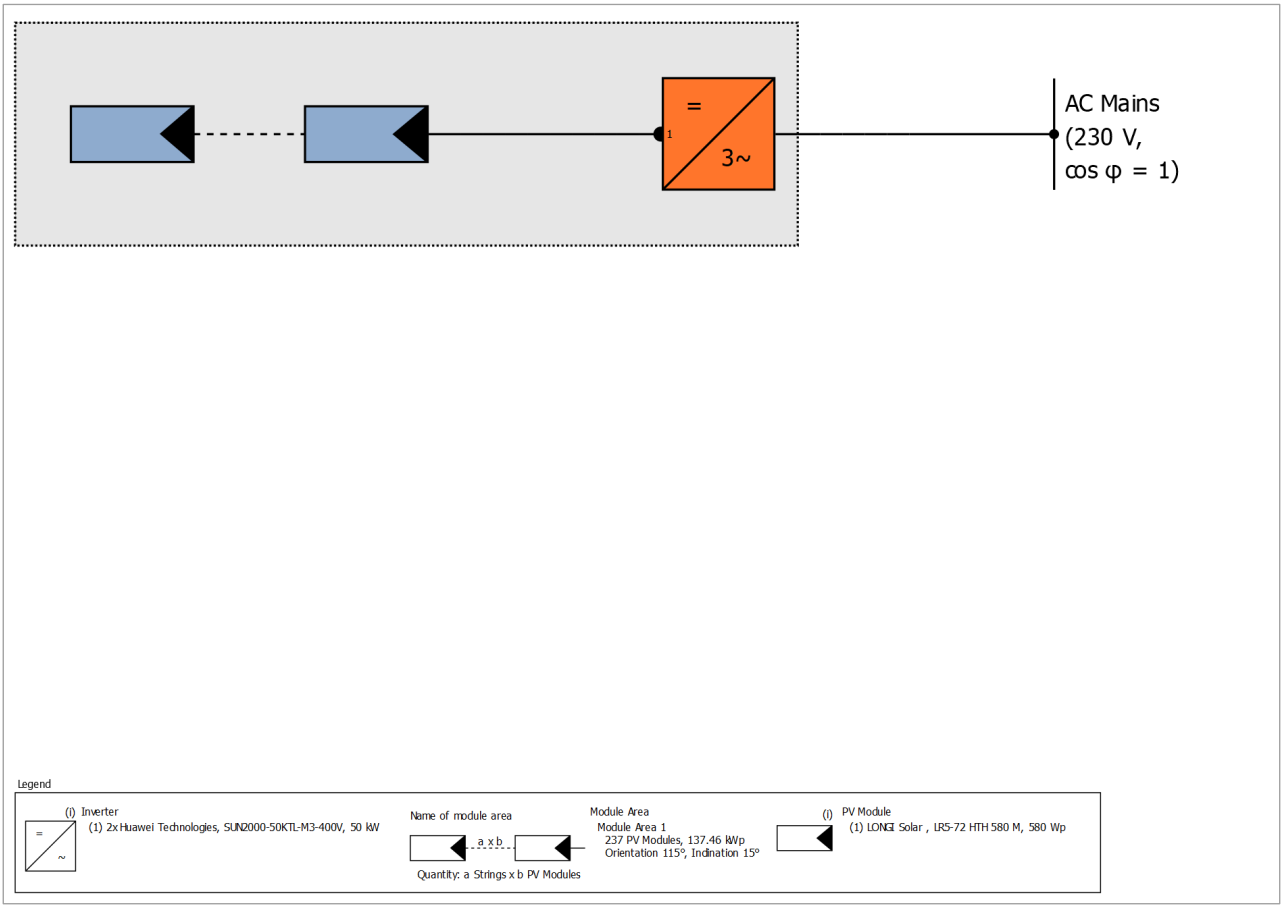


Figure: Schematic diagram

The yield

The yield

PV Generator Energy (AC grid)	167,914	kWh
Grid Feed-in	167,914	kWh
Down-regulation at Feed-in Point	0	kWh
Own Power Consumption	0.0	%
Solar Fraction	0.0	%
Spec. Annual Yield	1,221.19	kWh/kWp
Performance Ratio (PR)	93.4	%
CO_2 Emissions avoided	78,897	kg / year

Financial Analysis

Your Gain

Total investment costs	78,442.00	€
Return on Assets	15.77	%
Amortization Period	6.4	Years
Electricity Production Costs	0.02	€/kWh
Energy Balance/Feed-in Concept	Full Feed-in	

The results have been calculated with a mathematical model calculation from Valentin Software GmbH (PV*SOL algorithms). The actual yields from the solar power system may differ as a result of weather variations, the efficiency of the modules and inverter, and other factors.

Set-up of the System

Overview

System Data

Type of System	Grid-connected PV System
Start of Operation	29-Aug-24

Climate Data

Location	Chisinau, MDA (1991 - 2010)
Resolution of the data	1 h
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Hofmann
- Irradiance onto tilted surface	Hay & Davies

Module Areas

1. Module Area - Module Area 1

PV Generator, 1. Module Area - Module Area 1

Name	Module Area 1
PV Modules	237 x LR5-72 HTH 580 M (v3)
Manufacturer	LONGI Solar
Inclination	15 °
Orientation	Southeast 115 °
Installation Type	Mounted - Roof
PV Generator Surface	612.2 m²

Inverter configuration

Configuration 1

Module Area	Module Area 1
Inverter 1	
Model	SUN2000-50KTL-M3-400V (v2)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	138 %
Configuration	MPP 1: 2 x 19
	MPP 2: 2 x 18
	MPP 3: 2 x 15
	MPP 4: 1 x 15
Inverter 2	
Model	SUN2000-50KTL-M3-400V (v2)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	136.9 %
Configuration	MPP 1: 2 x 15
	MPP 2: 2 x 15
	MPP 3: 2 x 15
	MPP 4: 2 x 14

AC Mains

AC Mains

Number of Phases	3
Mains Voltage (1-phase)	230 V
Displacement Power Factor (cos phi)	+/- 1

Simulation Results

Results Total System

PV System		
PV Generator Output	137.5	kWp
Spec. Annual Yield	1,221.19	kWh/kWp
Performance Ratio (PR)	93.4	%
Grid Feed-in	167,914	kWh/Year
Grid Feed-in in the first year (incl. module degradation)	167,914	kWh/Year
Standby Consumption (Inverter)	49	kWh/Year
CO_2 Emissions avoided	78,897	kg / year

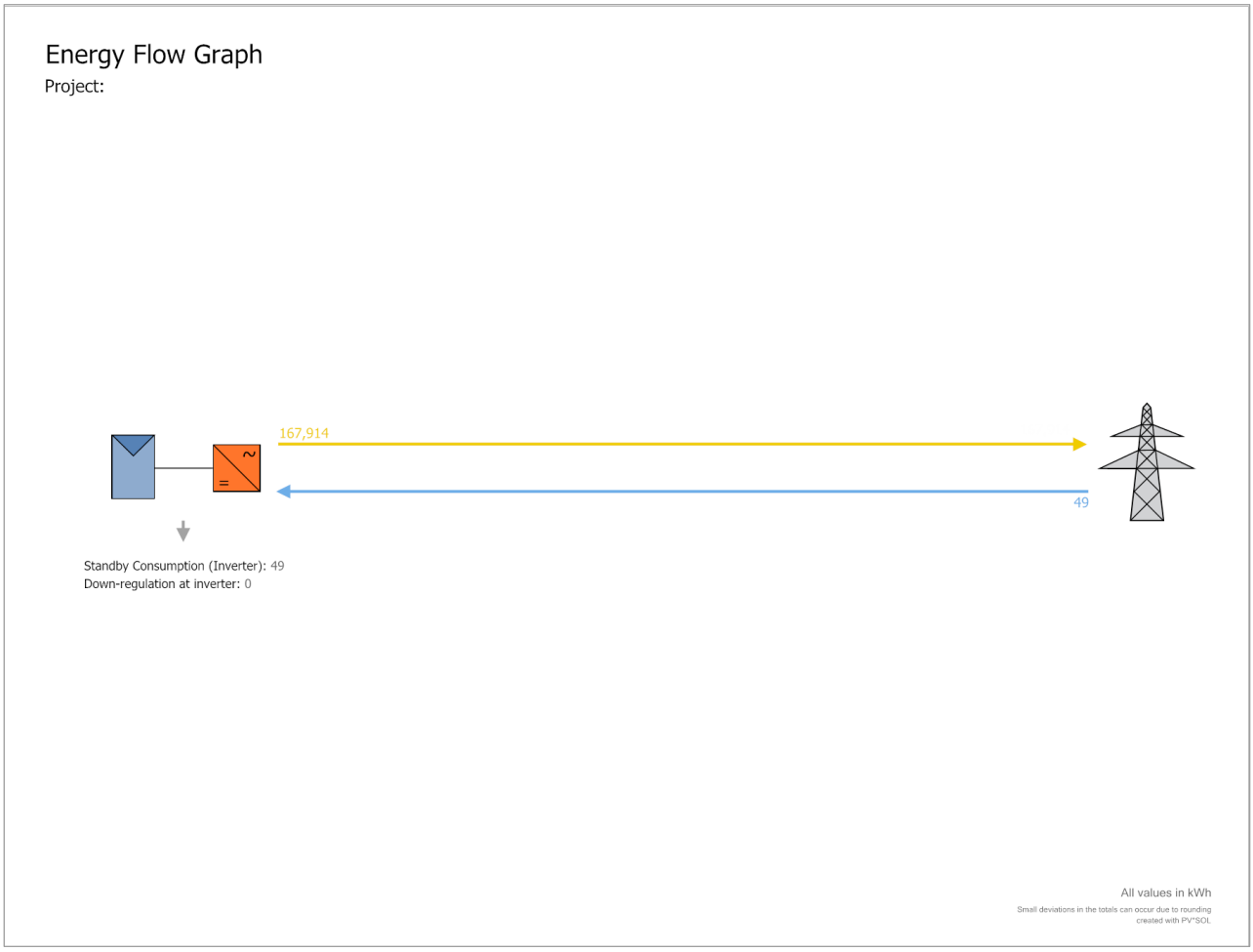


Figure: Energy Flow Graph

Financial Analysis

Overview

System Data

Grid Feed-in in the first year (incl. module degradation)	167,914	kWh/Year
PV Generator Output	137.5	kWp
Start of Operation of the System	29-Aug-24	
Assessment Period	25	Years
Interest on Capital	1	%

Economic Parameters

Return on Assets	15.77	%
Accrued Cash Flow (Cash Balance)	214,844.88	€
Amortization Period	6.4	Years
Electricity Production Costs	0.02	€/kWh

Payment Overview

Specific Investment Costs	570.65	€/kWp
Investment Costs	78,442.00	€
One-off Payments	0.00	€
Incoming Subsidies	0.00	€
Annual Costs	0.00	€/Year
Other Revenue or Savings	0.00	€/Year

Remuneration and Savings

Total Payment from Utility in First Year	12,929.38	€/Year
Remuneration of Electricity sold to Third Party		
Price of Electricity sold to Third Party	0.08	€/kWh
Remuneration of Electricity sold to Third Party	12,929.38	€/Year

Cash flow

Cashflow Table

	Year 1	Year 2	Year 3	Year 4	Year 5
Investments	(€78,442.00)	€0.00	€0.00	€0.00	€0.00
Feed-in / Export Tariff	€11,360.36	€12,674.62	€12,549.13	€12,424.88	€12,301.86
Annual Cash Flow	**(€67,081.64)**	**€12,674.62**	**€12,549.13**	**€12,424.88**	**€12,301.86**
Accrued Cash Flow (Cash Balance)	(€67,081.64)	(€54,407.01)	(€41,857.88)	(€29,433.00)	(€17,131.14)

	Year 6	Year 7	Year 8	Year 9	Year 10
Investments	€0.00	€0.00	€0.00	€0.00	€0.00
Feed-in / Export Tariff	€12,180.06	€12,059.47	€11,940.07	€11,821.85	€11,704.80
Annual Cash Flow	**€12,180.06**	**€12,059.47**	**€11,940.07**	**€11,821.85**	**€11,704.80**
Accrued Cash Flow (Cash Balance)	(€4,951.08)	€7,108.39	€19,048.46	€30,870.31	€42,575.11

	Year 11	Year 12	Year 13	Year 14	Year 15
Investments	€0.00	€0.00	€0.00	€0.00	€0.00
Feed-in / Export Tariff	€11,588.91	€11,474.17	€11,360.56	€11,248.08	€11,136.72
Annual Cash Flow	**€11,588.91**	**€11,474.17**	**€11,360.56**	**€11,248.08**	**€11,136.72**
Accrued Cash Flow (Cash Balance)	€54,164.02	€65,638.19	€76,998.75	€88,246.84	€99,383.55

	Year 16	Year 17	Year 18	Year 19	Year 20
Investments	€0.00	€0.00	€0.00	€0.00	€0.00
Feed-in / Export Tariff	€11,026.45	€10,917.28	€10,809.19	€10,702.17	€10,596.20
Annual Cash Flow	**€11,026.45**	**€10,917.28**	**€10,809.19**	**€10,702.17**	**€10,596.20**
Accrued Cash Flow (Cash Balance)	€110,410.00	€121,327.28	€132,136.47	€142,838.63	€153,434.84

	Year 21	Year 22	Year 23	Year 24	Year 25
Investments	€0.00	€0.00	€0.00	€0.00	€0.00
Feed-in / Export Tariff	€10,491.29	€10,387.42	€10,284.57	€10,182.74	€10,081.92
Annual Cash Flow	**€10,491.29**	**€10,387.42**	**€10,284.57**	**€10,182.74**	**€10,081.92**
Accrued Cash Flow (Cash Balance)	€163,926.13	€174,313.54	€184,598.11	€194,780.86	€204,862.78

	Year 26
Investments	€0.00
Feed-in / Export Tariff	€9,982.10
Annual Cash Flow	**€9,982.10**
Accrued Cash Flow (Cash Balance)	€214,844.88

Degradation and inflation rates are applied on a monthly basis over the entire observation period. This is done in the first year.

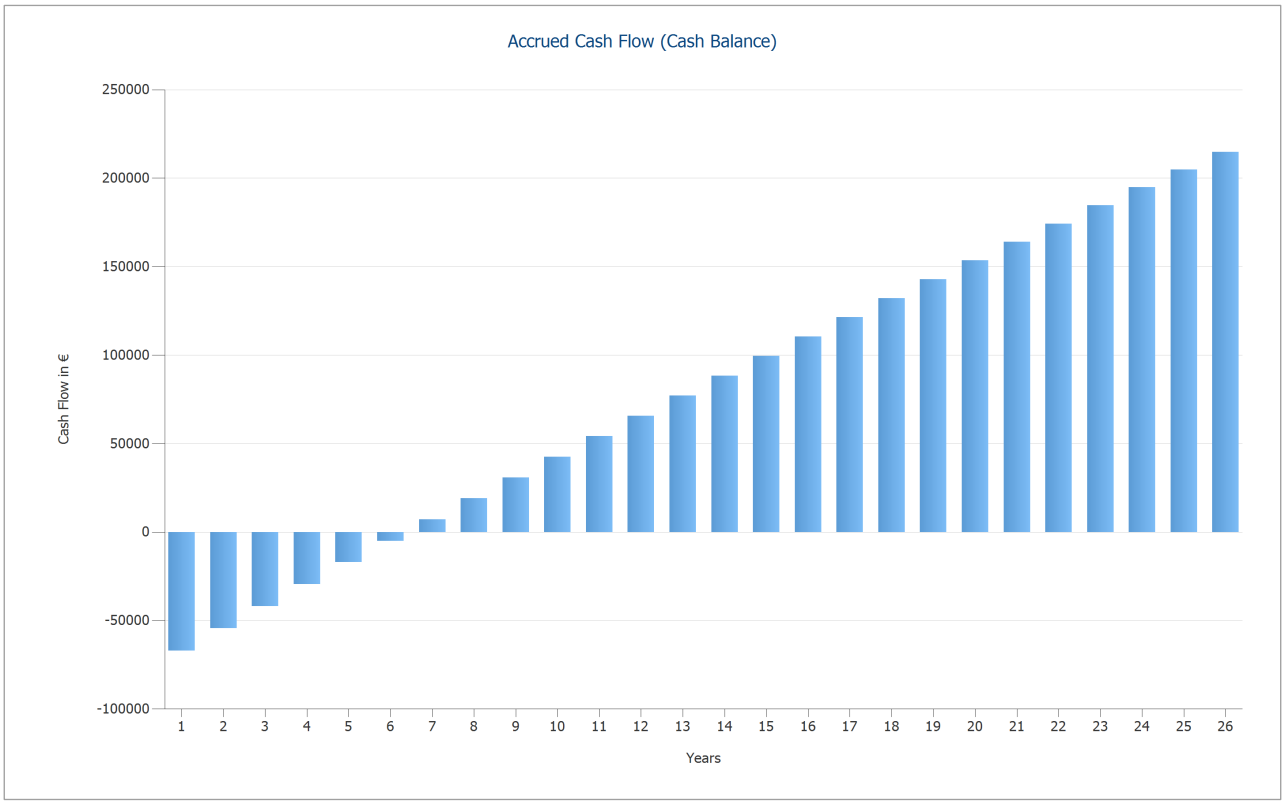


Figure: Accrued Cash Flow (Cash Balance)

Plans and parts list

Circuit Diagram

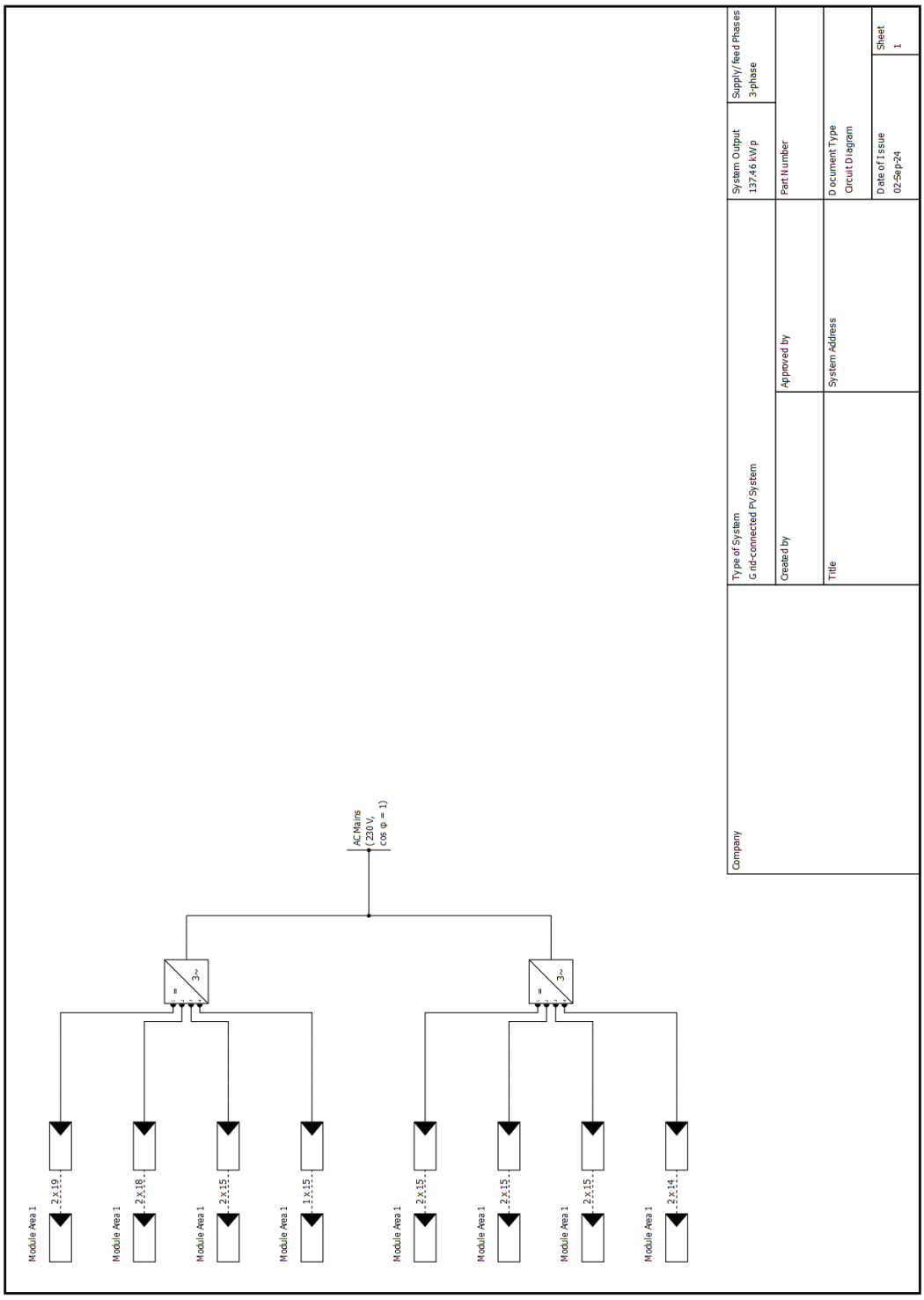


Figure: Circuit Diagram

Parts list

Parts list

#	Type	Item number	Manufacturer	Name	Quantity	Unit
1	PV Module		LONGI Solar	LR5-72 HTH 580 M	237	Piece
2	Inverter		Huawei Technologies	SUN2000-50KTL-M3-400V	2	Piece