LESSO

GUANGDONG LESSO BANHAO NEW ENERGY TECHNOLOGY GROUP CO., LTD.
The 1st and 2nd floors of the workshop in Zone 2, No. 58, Longzhou West Road, Longjiang Town, Shunde District, Foshan City, Guangdong Province, P.R.China

www.lesso.com/solar info@lessosolar.com LESSO Solar

LESSO SOLAR MODULES

A Bright and Exciting Journey

LESSO Group is a Hong Kong-listed (2128.HK) manufacturer of building materials with an annual revenue of over USD4.5 billion from its global operations.

LESSO Solar, a flagship division of LESSO Group, specialises in manufacturing solar panels, inverters, and energy storage systems, and providing solar-energy solutions.

Founded in 2022, LESSO Solar has been growing with spectacular pace. We have a production capacity of 7GW for solar panels in early 2023, and expect a global capacity of over 15GW by the end of 2023.

USD4.5 bil
Group Revenue for 2021

7GW
Production Capacity

15GW
By the end of 2023

SCALING UP TO BUILD SUPER FACTORIES OF THE FUTURE

Picture: Wusha 6.4GW Factory

Poised to grow into a large-scale global manufacturer of solar solutions, we are rapidly expanding our production capabilities by utilizing the latest manufacturing technologies and building more factories around the world.

Using only the best raw materials and leveraging on our in-house logistics capabilities, we ensure each step of the process is well controlled to deliver the best experience for our customers.

Wusha Factory
Shunde, China

6.4GW in solar modules

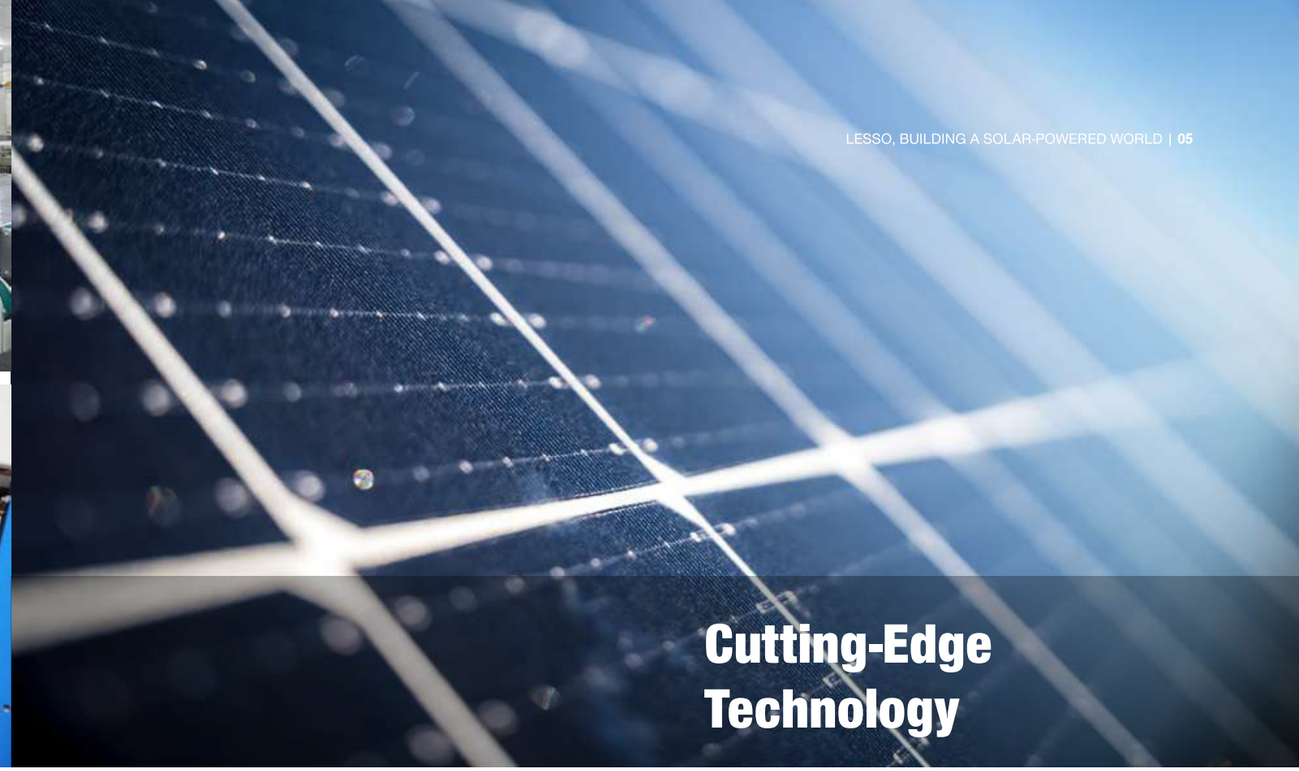
Chongkou Factory
Shunde, China

500MW in solar modules

Semarang Factory - June 2023
Semarang, Indonesia

2GW in solar modules

Leading the Future with Intelligent Manufacturing



Cutting-Edge Technology

Our Certificates

Our Strategic Goals

- Focused Technologies
- Large-Scale Production
- Well-Known Brand
- International Market
- Collectivize Management

Our Awards

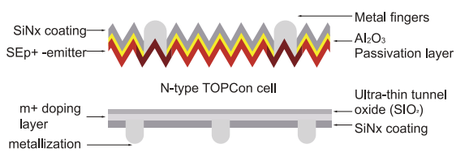
Half-cell Technology

- Reducing loss of current
- Low shading loss
- Lower working temperature

MBB Technology

- Reducing string and increasing energy
- Reducing busbar loss
- Improving efficiency

N-type Technology



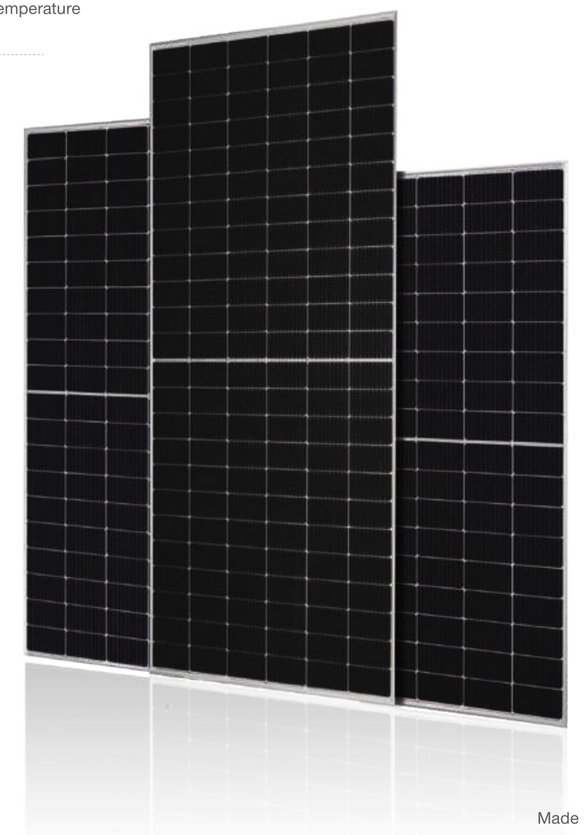
- Multi-layered technology, resulting in efficient enhancement of energy generation
- One of the highest warranty period in the industry

P-type series

Hardcore Energy, Reliable Technology

Features and Benefits

- The application of multi-busbar (MBB) half-cut cell technology brings stronger resistance to shade and lower risk of hot spot.
- Strict control on raw materials and process optimization of high efficiency PERC ensure better resistance against PID of PV module.
- Through harsh weathering tests of sand, dust, salt mist, ammonia, etc., to get stronger weather resistance of outdoor environment.
- Lower oxygen and carbon content result in lower LID.
- By series and parallel design, to reduce the series RS and achieve higher power output and lower BOS cost.
- Lower temperature coefficient and lower operating temperature can ensure higher power generation.



Made in China

182 MBB Mono Perc Half-cell Module

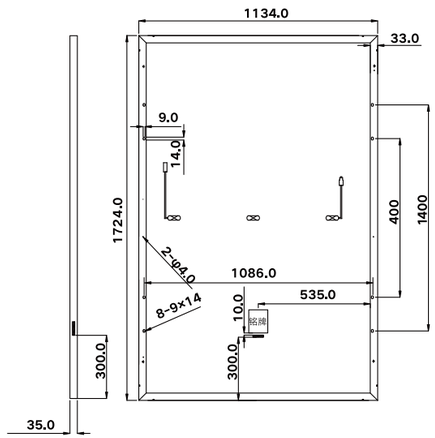
Power Range
390W ~ 415W

Power Sorting Tolerance
0W ~ +5W

Maximum Efficiency
21.2%

*Customizable with black Frame.

(Unit: mm)



Electrical Performance Parameters | STC

Model Type		390D(HPM) 54(182)	395D(HPM) 54(182)	400D(HPM) 54(182)	405D(HPM) 54(182)	410D(HPM) 54(182)	415D(HPM) 54(182)
Nominal Max. Power	Pmax(W)	390	395	400	405	410	415
Max.imum Power Voltage	Vmp(V)	30.55	30.75	30.95	31.15	31.35	31.55
Max.imum Power Current	Imp(A)	12.77	12.84	12.92	13.00	13.08	13.16
Open Circuit Voltage	Voc(V)	36.57	36.77	36.97	37.17	37.37	37.57
Short Circuit Current	Isc(A)	13.64	13.71	13.79	13.87	13.95	14.03
Module Efficiency	(%)	19.90	20.20	20.50	20.70	21.00	21.20
Power Output Tolerance	(W)	0~+5W					

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
* Tolerance(Pmax) ±3%, (Voc)±3%, (Isc)±4%.

Electrical Performance Parameters | NMOT

Model Type		390D(HPM) 54(182)	395D(HPM) 54(182)	400D(HPM) 54(182)	405D(HPM) 54(182)	410D(HPM) 54(182)	415D(HPM) 54(182)
Nominal Max. Power	Pmax(W)	285	290	295	300	305	310
Max.imum Power Voltage	Vmp(V)	27.25	27.64	28.00	28.38	28.72	28.88
Max.imum Power Current	Imp(A)	10.46	10.50	10.54	10.58	10.62	10.54
Open Circuit Voltage	Voc(V)	34.53	34.68	34.83	34.98	35.13	35.28
Short Circuit Current	Isc(A)	10.84	10.94	11.70	11.19	11.24	11.32

* NMOT: Irradiance 800W/m², Cell Temperature 20°C, Wind Speed 1m/s.
* Tolerance(Pmax) ±3%, (Voc)±3%, (Isc)±4%.

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1724×1134×35mm
Weight	21.8kg
Front Glass	3.2 mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy (White/Black)
Junction Box	IP68 rated
Cable	4mm² PV cable, 300mm or customized length
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	PV-CO01-1A, SUZHOU UKT New Energy, PV-KST4-EVO2/xy_UR&PV-KBT4-EVO2/xy_UR Stäbli Electrical Connectors, PV-01 Guandong Lesso Electric
Per Pallet	31pcs
Per Container(40'HQ)	806pcs

* No mounting via clamps.

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

*fire class rating:C

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

12 years product workmanship warranty
25 years linear power output warranty
1st year power degradation no more than **2%**
Subsequent annual power degradation no more than **0.55%**

182 MBB Mono Perc Half-cell Module

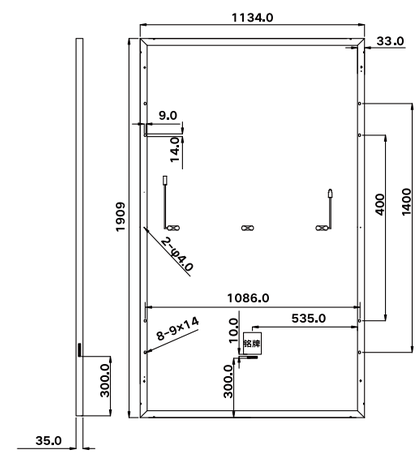
Power Range
435W ~ 460W

Power Sorting Tolerance
0W ~ +5W

Maximum Efficiency
21.2%

*Customizable with black Frame.

(Unit: mm)



Electrical Performance Parameters | STC

Model Type		435D(HPM) 60(182)	440D(HPM) 60(182)	445D(HPM) 60(182)	450D(HPM) 60(182)	455D(HPM) 60(182)	460D(HPM) 60(182)
Nominal Max. Power	Pmax(W)	435	440	445	450	455	460
Max.imum Power Voltage	Vmp(V)	33.93	34.13	34.33	34.53	34.73	34.93
Max.imum Power Current	Imp(A)	12.83	12.90	12.97	13.04	13.11	13.18
Open Circuit Voltage	Voc(V)	40.72	40.92	41.12	41.32	41.52	41.72
Short Circuit Current	Isc(A)	13.69	13.76	13.83	13.90	13.97	14.04
Module Efficiency	(%)	20.10	20.30	20.60	20.80	21.00	21.20
Power Output Tolerance	(W)	0~+5W					

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
* Tolerance(Pmax) ±3%, (Voc)±3%, (Isc)±4%.

Electrical Performance Parameters | NMOT

Model Type		435D(HPM) 60(182)	440D(HPM) 60(182)	445D(HPM) 60(182)	450D(HPM) 60(182)	455D(HPM) 60(182)	460D(HPM) 60(182)
Nominal Max. Power	Pmax(W)	315	320	325	330	335	340
Max.imum Power Voltage	Vmp(V)	30.47	30.77	31.08	31.37	31.67	31.96
Max.imum Power Current	Imp(A)	10.34	10.40	10.46	10.52	10.58	10.64
Open Circuit Voltage	Voc(V)	38.68	38.72	38.79	38.87	39.01	39.15
Short Circuit Current	Isc(A)	10.59	10.64	10.69	10.74	10.79	10.84

* NMOT: Irradiance 800W/m², Cell Temperature 20°C, Wind Speed 1m/s.
* Tolerance(Pmax) ±3%, (Voc)±3%, (Isc)±4%.

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×35mm
Weight	23.2kg
Front Glass	3.2 mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy (White/Black)
Junction Box	IP68 rated
Cable	4mm² PV cable, 300mm or customized length
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	PV-CO01-1A, SUZHOU UKT New Energy, PV-KST4-EVO2/xy_UR&PV-KBT4-EVO2/xy_UR Stäbli Electrical Connectors, PV-01 Guandong Lesso Electric
Per Pallet	31pcs
Per Container(40'HQ)	744pcs

* No mounting via clamps.

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

*fire class rating:C

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

Made in China

12 years product workmanship warranty
25 years linear power output warranty
1st year power degradation no more than **2%**
Subsequent annual power degradation no more than **0.55%**

182 MBB Mono Perc Half-cell Module

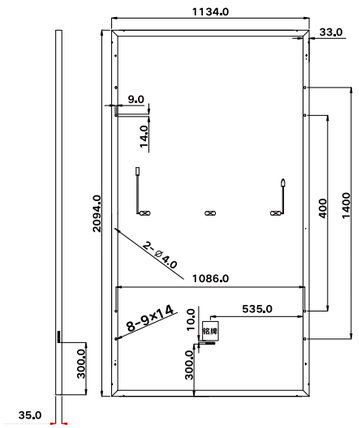
Power Range
480W ~ 505W

Power Sorting Tolerance
0W ~ +5W

Maximum Efficiency
21.3%

*Customizable with black Frame.

(Unit: mm)



Electrical Performance Parameters | STC

Model Type		480D(HPM) 66(182)	485D(HPM) 66(182)	490D(HPM) 66(182)	495D(HPM) 66(182)	500D(HPM) 66(182)	505D(HPM) 66(182)
Nominal Max. Power	Pmax(W)	480	485	490	495	500	505
Max.imum Power Voltage	Vmp(V)	37.60	37.80	38.00	38.20	38.40	38.60
Max.imum Power Current	Imp(A)	12.77	12.84	12.90	12.96	13.03	13.09
Open Circuit Voltage	Voc(V)	44.67	44.87	45.07	45.27	45.47	45.67
Short Circuit Current	Isc(A)	13.64	13.70	13.77	13.83	13.89	13.95
Module Efficiency	(%)	20.20	20.40	20.60	20.80	21.10	21.30
Power Output Tolerance	(W)	0~+5W					

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
* Tolerance(Pmax) ±3%, (Voc)±3%, (Isc)±4%.

Electrical Performance Parameters | NMOT

Model Type		480D(HPM) 66(182)	485D(HPM) 66(182)	490D(HPM) 66(182)	495D(HPM) 66(182)	500D(HPM) 66(182)	505D(HPM) 66(182)
Nominal Max. Power	Pmax(W)	360	365	370	375	380	385
Max.imum Power Voltage	Vmp(V)	34.62	34.80	34.97	35.34	35.51	35.64
Max.imum Power Current	Imp(A)	10.40	10.50	10.60	10.62	10.71	10.81
Open Circuit Voltage	Voc(V)	42.17	42.31	42.45	42.70	42.87	43.03
Short Circuit Current	Isc(A)	11.02	11.07	11.13	11.23	11.30	11.42

* NMOT: Irradiance 800W/m², Cell Temperature 20°C, Wind Speed 1m/s.
* Tolerance(Pmax) ±3%, (Voc)±3%, (Isc)±4%.

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2094×1134×35mm
Weight	25.1kg
Front Glass	3.2 mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy (White/Black)
Junction Box	IP68 rated
Cable	4mm² PV cable, 300mm or customized length
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	PV-CO01-1A, SUZHOU UKT New Energy, PV-KST4-EVO2/xy_UR&PV-KBT4-EVO2/xy_UR Stäbli Electrical Connectors, PV-01 Guandong Lesso Electric
Per Pallet	31pcs
Per Container(40'HQ)	682pcs

* No mounting via clamps.

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

*fire class rating:C

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

12 years product workmanship warranty
25 years linear power output warranty
1st year power degradation no more than **2%**
Subsequent annual power degradation no more than **0.55%**

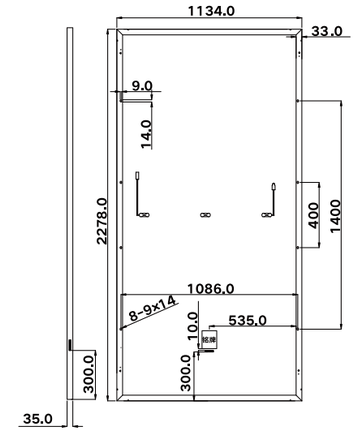
182 MBB Mono Perc Half-cell Module

Power Range
530W ~ 550W

Power Sorting Tolerance
0W ~ +5W

Maximum Efficiency
21.3%

(Unit: mm)



Electrical Performance Parameters | STC

Model Type		530D(HPM) 72(182)	535D(HPM) 72(182)	540D(HPM) 72(182)	545D(HPM) 72(182)	550D(HPM) 72(182)
Nominal Max. Power	Pmax(W)	530	535	540	545	550
Max.imum Power Voltage	Vmp(V)	41.20	41.40	41.60	41.80	42.00
Max.imum Power Current	Imp(A)	12.87	12.92	12.98	13.04	13.10
Open Circuit Voltage	Voc(V)	49.02	49.22	49.42	49.62	49.82
Short Circuit Current	Isc(A)	13.74	13.79	13.85	13.91	13.97
Module Efficiency	(%)	20.60	20.70	20.80	21.10	21.30
Power Output Tolerance	(W)	0~+5W				

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
* Tolerance(Pmax) ±3%, (Voc)±3%, (Isc)±4%.

Electrical Performance Parameters | NMOT

Model Type		530D(HPM) 72(182)	535D(HPM) 72(182)	540D(HPM) 72(182)	545D(HPM) 72(182)	550D(HPM) 72(182)
Nominal Max. Power	Pmax(W)	394	398	402	405	409
Max.imum Power Voltage	Vmp(V)	37.79	37.91	38.08	38.25	38.42
Max.imum Power Current	Imp(A)	10.45	10.50	10.55	10.60	10.65
Open Circuit Voltage	Voc(V)	46.51	46.57	46.65	46.72	46.84
Short Circuit Current	Isc(A)	11.10	11.14	11.19	11.26	11.33

* NMOT: Irradiance 800W/m², Cell Temperature 20°C, Wind Speed 1m/s.
* Tolerance(Pmax) ±3%, (Voc)±3%, (Isc)±4%.

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm
Weight	28.0kg
Front Glass	3.2 mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm² PV cable, 300mm or customized length
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	PV-CO01-1A, SUZHOU UKT New Energy, PV-KST4-EVO2/xy_UR&PV-KBT4-EVO2/xy_UR Stäbli Electrical Connectors, PV-01 Guandong Lesso Electric
Per Pallet	31pcs
Per Container(40'HQ)	620pcs

* No mounting via clamps.

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

*fire class rating:C

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

Made in China

12 years product workmanship warranty
25 years linear power output warranty
1st year power degradation no more than **2%**
Subsequent annual power degradation no more than **0.55%**

LESSO's Solar Business was founded in January 2022.

In our first year, our solar modules have been used to build over 90 projects around the world.

Utility Scale Solar Power Station

- A Utility Scale Solar Power Station refers to medium to large scale PV power generation systems, mainly installed in areas such as deserts, barren mountains, wastelands, tidal flats, scrapyards, abandoned mining zones, etc., giving otherwise unusable land a new lease of life. The power generated through these systems can be connected to the power grid through long-distance high-pressure transmission systems.
- The most common applications of Utility Scale Solar Power Stations include ground-mounted power stations on flat lands and mountains, as well as implementations that are complementary with agriculture, aquaculture, as well as forestry industries.
- Almost all implementations of Utility Scale Solar Power Stations are connected to the power grid and are able to generate income by the sale of power at a certain grid purchase price.

ADVANTAGE

Inexhaustible
Solar power is everlasting, sustainable and inexhaustible.

Safe and reliable
Clean energy that is safe and reliable.

Universally available
Unused rooftops and spare land resources can be intensively utilized.

No resource consumption
No other fuel or power transmission lines needed. Generate and consume electricity locally.

Energy efficient set-up
PV panels effectively reduces internal temperature of buildings, saving energy and cost.

Industrial & Commercial Rooftop Solar Power Station

ADVANTAGE

Heat insulation - reduction of building temperature
PV modules convert sunlight irradiation into electricity, and can act as a thermal insulation layer on rooftops to reduce building temperature by 3-4℃.

Save energy and carbon emissions
Solar power is an inexhaustible source of green energy, and can alleviate urban electricity consumption and relieve power shortage pressure. Besides, by using solar power to reduce carbon emissions, an enterprise can enhance brand image, save energy expenditure and strengthen competitiveness.

Increase usable floor space
If local authority permits, shed-type Solar power stations, within authorized height limit, can be constructed on the rooftops of industrial and commercial buildings. This frees up floor space for owners to meet other purposes.

Generate additional profit
Industrial and commercial businesses require high power consumption. By developing and constructing rooftop Solar power stations, businesses can harvest cheap and clean green electricity efficiently and conveniently during the day to save on power bills to save power bills and increase profit. A Solar power station can run safely and efficiently over 25 years, and its ROI is 15% or more.

PROJECT HIGHLIGHTS

Businesses can use the free electricity generated from PV power stations directly, reducing consumption of electricity from the power grid, thereby enjoying immense savings on their electrical bill. If applicable, a PV power station can even be connected to the power grid, allowing businesses to sell excess electricity to the grid to generate additional profit.

Yunan Rooftop Solar Power Station

Location: Ducheng Town, Yunan County, Yunfu, Guangdong, China
Project Capacity: 4300KW
Module Type: LESSO 182 PV Module - 545W / 655W

Chongkou Rooftop Solar Power Station

Location: Chongkou, Shunde, Foshan, Guangdong, China
Project Capacity: 2300KW
Module Type: LESSO 182 PV Module - 540W

Tianfeng Rooftop Solar Power Station

Location: Jingling Town, Jingzhou, Hubei, China
Project Capacity: 1054.62KW
Module Type: LESSO 182 PV Module - 545W

Muling Rooftop Solar Power Station

Location: Mujiangdan, Heilongjiang, China
Project Capacity: 799.74KW
Module Type: LESSO 182 PV Module - 545W

Baoying Rooftop Solar Power Station

Location: Maonan, Maoming, Guangdong, China
Project Capacity: 700KW
Module Type: LESSO 182 PV Module - 540W

Our Choice Rooftop Solar Power Station

Location: Shunde, Foshan, Guangdong, China
Project Capacity: 167.4KW
Module Type: LESSO 182 PV Module - 540W

Application example of
Pure Black serise PV moudle

Residential Solar Power Station

ADVANTAGE

Increase usable floor space

If local authority permits, shed-type solar power stations, within authorized height limit, can be constructed on the rooftop of residential houses. This frees up floor space for owners to meet other purposes.

Heat insulation - reduction of building temperature

PV modules on rooftops can absorb sunshine and heat and play as a thermal insulation layer over rooftop to reduce building temperature by 3-6℃, especially in summer. Meanwhile, PV panels will protect rooftops and help delay signs of aging.

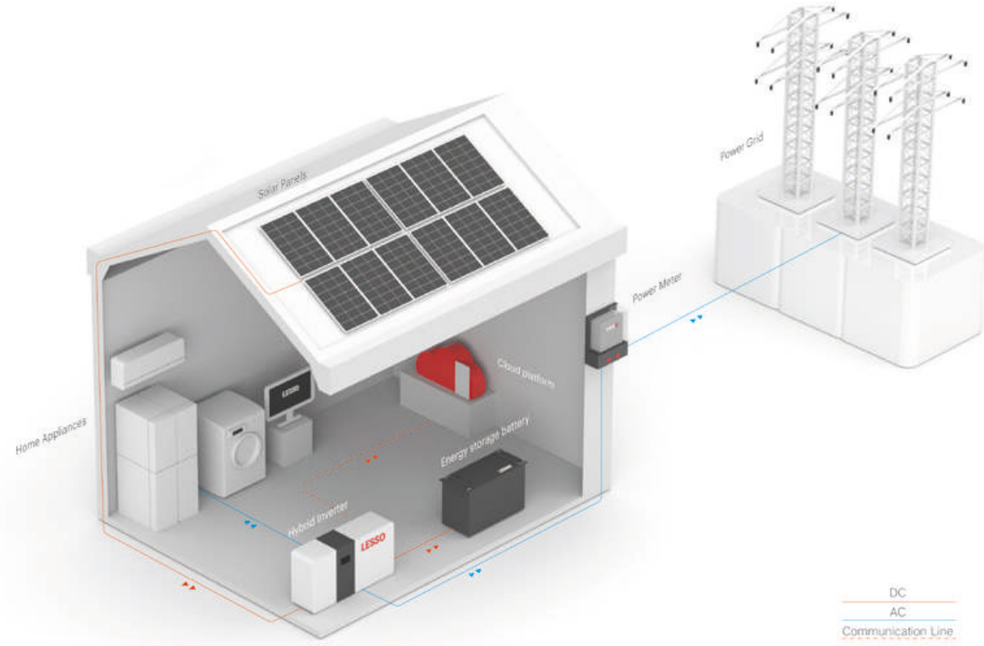
Prevent damage and delay aging of rooftops

PV panels can protect rooftops by reducing the exposure to sun and heavy rain, and thus prolong the life span and maintain the value of the building.

Triple lightning protection

With the built-in triple lightning protection system, solar power station is safe and able to protect family, rooftop and home appliances in the building from lighting damage.

Illustration of Residential On-Grid Solar Power System



LESSO

TURNING DESERTS INTO OASIS

Video:
Solar panels turn desert into oasis

In deserts like the Gobi in China or Rub' al Khali in UAE and Saudi Arabia, vegetation is hard to find, but sunshine is abundant. Solar panels not just turn sunlight into clean electricity, but also reduce the wind speed on the ground, protecting the vegetation. The water from these solar panels' periodical cleaning spills on the ground, further nurturing the grass. If the grass grows high enough, it may cover the solar panels, reducing their power generation efficiency and risking fire. You may hire someone to mow them or, marvellously, you may herd flocks of sheep to eat them. If you raise the height of the solar panels from the usual 50cm to 120cm, you will get a green lane for herding sheep under the panels. A new ecological system is born: solar, sheep, oasis.

Agriculture-complementary Solar Power Station

Agriculture-complementary Solar power station is a new development that combines Solar power stations constructed on top of greenhouses or pillars with agricultural plantations under it.

By constructing agriculture-complementary Solar power stations, clean energy can be generated and connected to the power grid. Meanwhile, high-tech farming methods can be implemented, thus intensively utilizing sunshine and land resources, improving their values and profits. This new method produces no pollution or emissions and doesn't occupy farmland.

Mode of Operation:
PV power generation on the top of the shed, vegetables are planted in the shed, and the power can be used not only by the shed, but also connected to the public power grid to sell electricity and get new energy subsidy.

Aquaculture-complementary Solar Power Station

Aquaculture-complementary Solar power station is a combination of Solar power station and aquaculture. In this combined mode, PV panels are installed over fish ponds, which can offer shelter and shade and maintain the temperature and oxygen content of the pond, so as to increase aquaculture productivity.

Aquaculture-complementary Solar power station is a good example of efficient land utilization and clean energy generation. By combining PV power generation and aquaculture above and in the fish ponds, lands are utilized more efficiently and can produce more social and economical profits.

LESSO BUILDING A SOLAR-POWERED WORLD

Countries listed on the map are those where LESSO has a sales and marketing office.