SUNGROW
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Residential Energy Storage System

SH5K PV ESS

Green and Effective

Why You Need the PV ESS (Energy Storage System)?

In many countries, with the rising popularity of solar energy and its essential PV systems, the feed-in tariffs of PV power have dropped considerably. Nevertheless, the average electricity prices are still growing at a rapid rate, resulting in increasing burdens on the households.
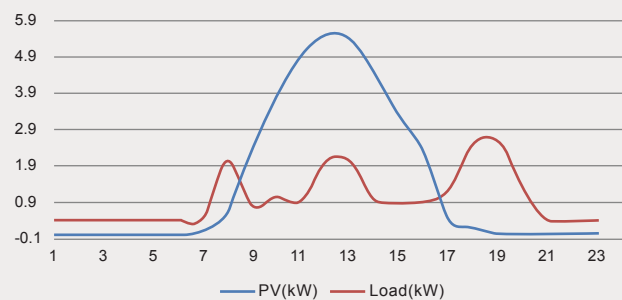
Electricity used in peak times can place a strain on the grid network, that is why energy providers charge a relatively larger amount for its service at peak time. As such the peak time service fee tends to be higher than the cost of actual usage.
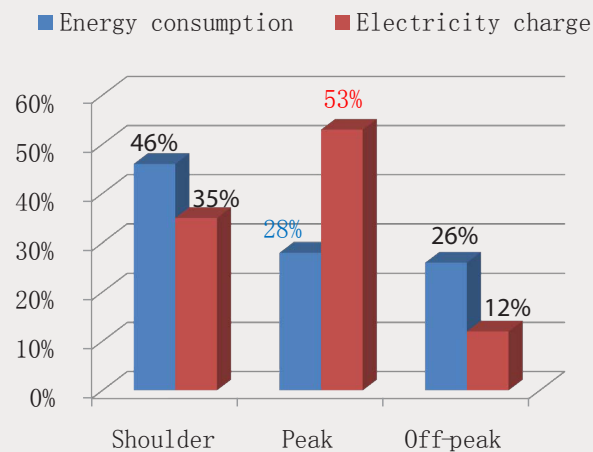
The average power consumption of a typical household for instance, 28% of its usage during peak period would contribute to 53% of the total electricity bill.

In the above scenario, families are much better off financially by installing a PV power generation system. But as shown in the figure, the consumption period of household loads does not match the output period of PV power generation well.

The problems at hand:

For our customers to store the PV generated electricity when it's abundant, then utilise the stored power during the peak electricity tariff.

The SH5K PV ESS

from SUNGROW is the perfect system that will significantly increase the self-consumption of PV power. On the other hand, the utility grid will be more stable and reliable with less PV power feeding in. In addition, the SH5K hybrid inverter can also be utilised as a part of the "zero-export" system and power distribution network storage system.

Great Financial Benefits Brought by SH5K PV ESS

Saves up to
70%
Electricity Bills

For average households, they would save 70% of the electricity bills every day with a SH5K PV ESS installed and reasonable configured!

And for some states, the electricity bills are calculated via single rate tariff, the SH5K PV ESS can drastically reduce the electricity spending for average households, by simply configuring the discharge interval of the battery.

Appliances Control
Intelligent
With DO function

SH5K hybrid inverter also provides one Digital Output node, which can intelligently control the household appliances (such as water heaters, pumps etc..) with a simple external device. The control modes are:

* Timed control;
* Real-time control through APPs;
* Intelligent and optimal control via the inverter.

SH5K hybrid inverter has integrated the intelligent EMS (Energy Management System)!

Economic Benefits
Maximized
Battery discharge-time adjustments

SH5K PV ESS can be configured to discharge battery at customers' convenience to better accommodate to electricity companies' different pricing rates.
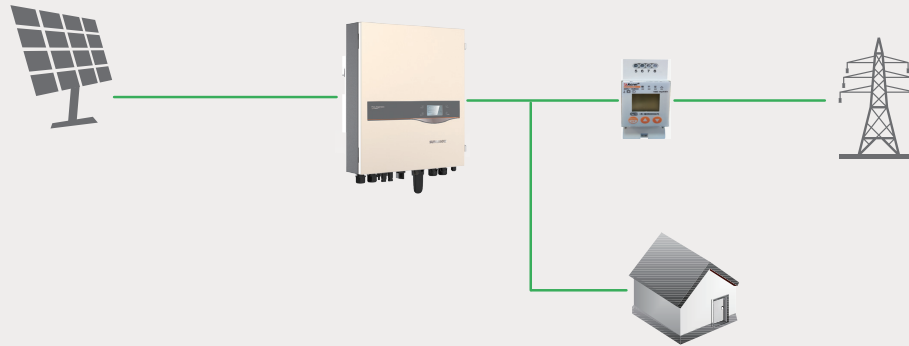
Example: The peak time electricity rate in New South Wales is from 2:00 pm to 8:00 pm every weekday, it is therefore recommended to set the battery discharge time to 2 pm-8 pm on weekdays. And resort to grid electric at off-peak rate.

SH5K PV ESS Applications

Residential PV energy storage system：
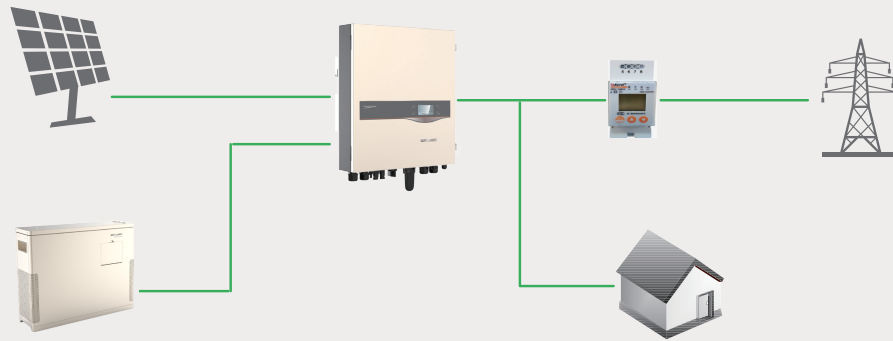
"Zero-export" System

If the household loads and the PV generation curve are well matched, battery module may not be required, the SH5K hybrid inverter and meter could be used as a "Zero-export" system.

In this system, the inverter output will be derated to ensure the feed-in power be zero when a feed-in power above zero is detected by the meter.

The feed-in power threshold can be set ranging from 0 to 5000 W. If the threshold value is set to 5000 W, all excessive power will be exported.

SH5K Controllable Feature Description

External Command → Control Box
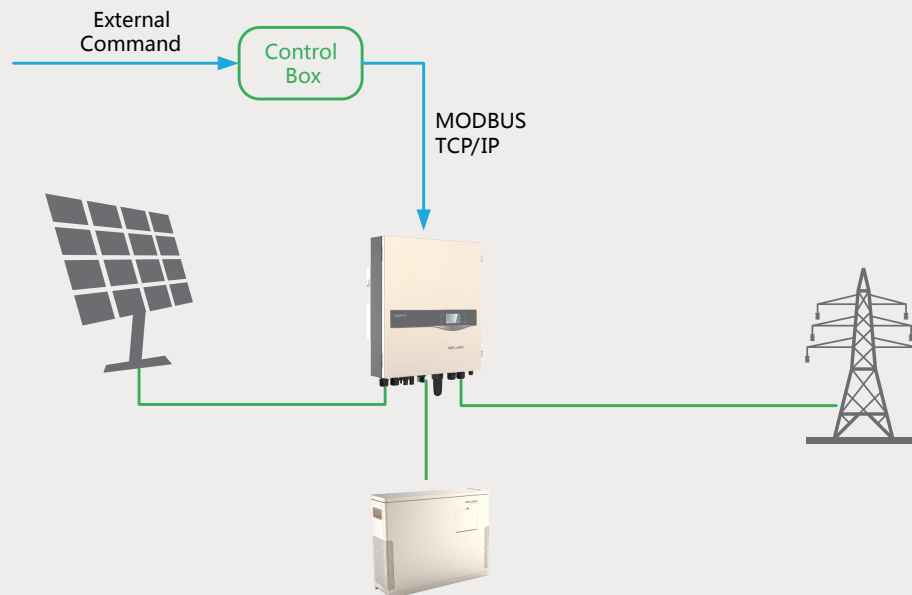
MODBUS TCP/IP

With the MODBUS TCP/IP protocol, the SH5K hybrid inverter can be manually configured via Control Box to shutdown, startup, active power derating, reactive power regulation, or charge/discharge power control etc..

If the external command is from the utility grid, the system can cooperate with the utility grid to follow the power management.

If the Control Box has been connected with the ammeter of buildings, the peak load shifting function of building electricity will be activated. In such a case, the battery capacity needs to be configured according to the specific situations.

SH5K

Input Side Data

Max. PV input voltage	600V
Startup voltage	125V
Nominal input voltage	345V
MPP voltage range	125~560V
MPP voltage range for nominal power	255~520V
No. of MPPTs	2
Max. number of PV strings per MPPT	1
Max. PV input current	20A (10A/10A)
Max. current for input connector	12A

Output Side Data

Nominal AC output power	5000W
Max AC output power (PF=1)	5000W
Max. AC output apparent power	5000VA
Max. AC output current	21.7A
Nominal AC voltage	230Vac
AC voltage range	180~276Vac
Nominal grid frequency	50Hz
Grid frequency range	45-55Hz
THD	<3% (Nominal power)
DC current injection	<0.5%In
Power factor	>0.99@default value at nominal power, (adj. 0.8 lagging ~0.8 leading)

Protection

Anti-islanding protection	Yes
AC short circuit protection	Yes
Leakage current protection	Yes
DC switch (solar)	Yes

Battery Side Data

Battery type	Li-battery/ Lead acid battery
Battery voltage	48V (32V-70V)
Max charge/discharge current	65A/65A

System Data

Max. efficiency	98.0%
Max. European efficiency	97.6%
Battery to grid efficiency	95.0%
Isolation method (solar)	Transformerless
Isolation method (battery)	HF
Ingress protection rating	IP65
Night power consumption	<1W
Noise emission	<30dB
Operating ambient temperature range	-25~60℃
Allowable relative humidity range	0~100%
Cooling method	Nature convection
Max. operating altitude	4000m (<2000m derating)
Display	Graphic LCD
Communication	2 × RS485/Ethernet/CAN/Wi-Fi (optional)
Power management	4 × Digital Inputs, 1 × Digital Output
Analogue inputs	PT1000 (temperature sensor)
DC connection type	MC4
AC connection type	Clamping yoke connector
Certificates and approvals (Planned)	AS4777, AS/NZS3100, SI4777, G59/2, G83/2, IEC62109-1, IEC62109-2, VDE-AR-N-4105, IEC 62619, IEC 61427, IEC 62040

Mechanical Data

Dimensions (W × H × D)	447 × 510 × 150mm
Mounting method	Wall bracket
Weight	20kg

Flexible
- Handy and light, easy to handle without lift machinery assistance, lower the cost of installation and maintenance.
- EMS Integrated, multiple-target can be optimized
- Integrated DC combine and surge protection function, lower the system cost
- DC switch, safe and convenient for maintenance
- Dual MPPTs

Safe and long lifetime
- Compatible to all batteries.
- Charging/discharging lifetime could up to 6000 cycles

Grid-friendly
- Active power continuously adjustable (0~100%)
- Reactive power control with power factor 0.8 lagging~0.8 leading

Efficient
- Max. Efficiency at 98.0%
- Battery to grid efficiency at 95.0%

Qualified
- TÜV, AS4777, VDE AR N 4105

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