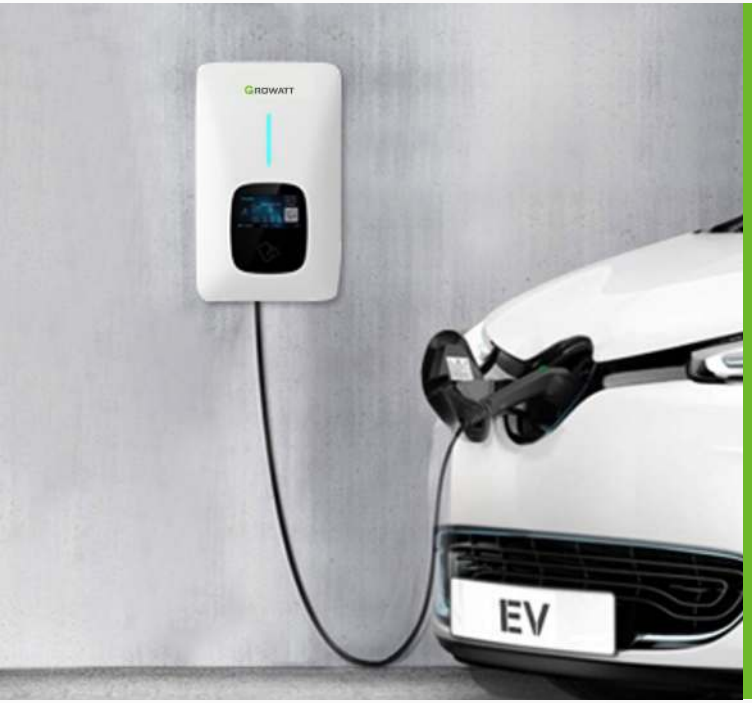
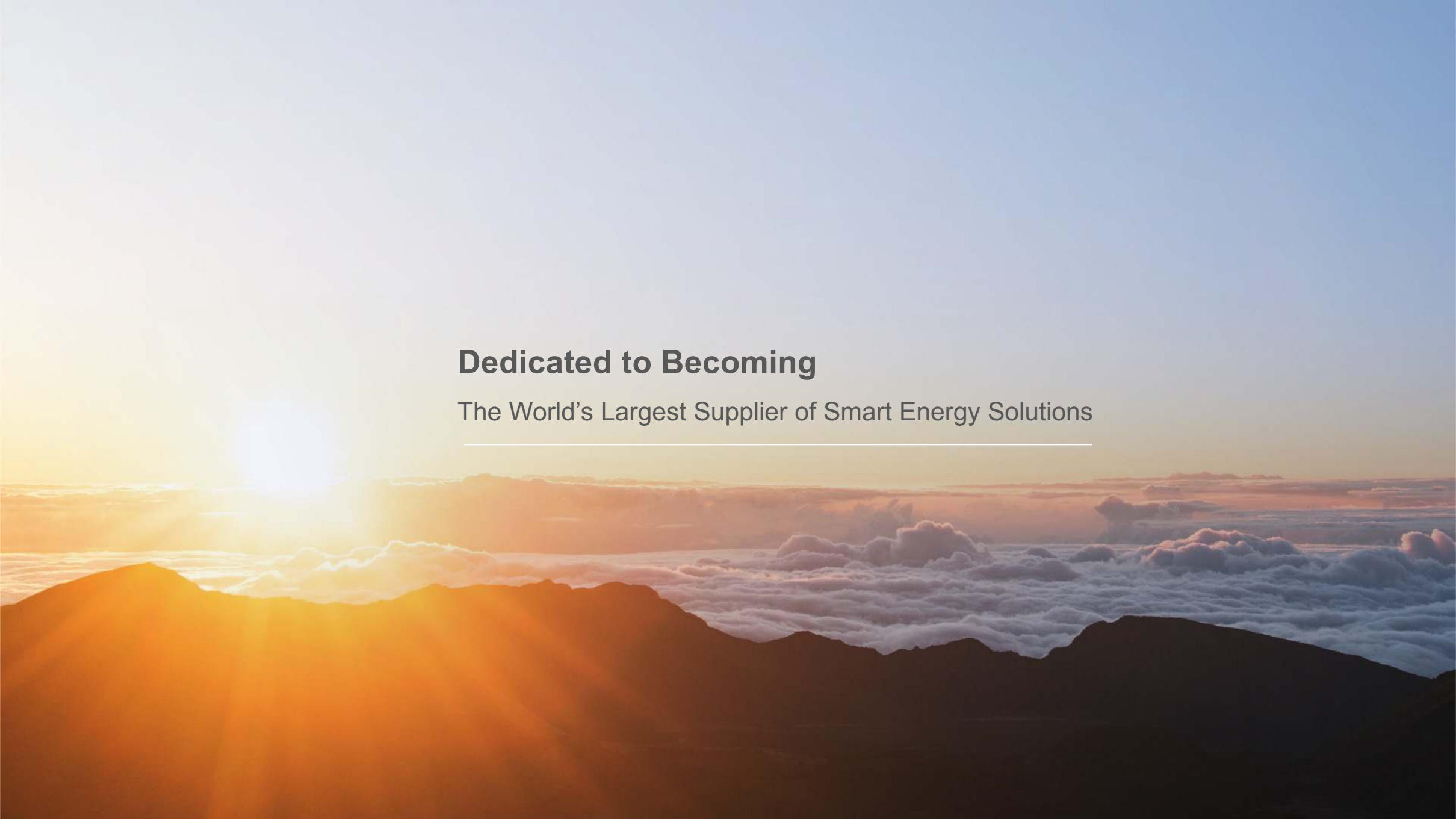


Growatt Smart EV Charger

SHENZHEN GROWATT NEW ENERGY CO.,LTD

GROWATT


Dedicated to Becoming
The World’s Largest Supplier of Smart Energy Solutions

CONTENTS

Product Overview

*THOR 11/22AS-**S***

*THOR 11/22AS-**P***

GROWATT Smart AC EV Charger

THOR 03/07AS-S, THOR 03/07AS-P
230VAC 3/7kW Home AC Charger
Charging time 7-15 hours

THOR 11/22AS-S, THOR 11/22AS-P
400VAC 11/22kW Public/Home AC Charger
Charging time 1-4 hours

* -S version for socket connection type, -P version for plug connection with EV charge gun

Product Overview

GROWATT Smart DC EV Charger

THOR 40DD-P, THOR 40DS-P

750VDC fast charger

Single CCS Type output or Dual CC Type outputs

Charging time about 1-2 hours

*CC Version: 2*CCS Type 2

Applications

THOR EV Charger covers the full residential and commercial scenarios

Residential

Commercial

Leading Features – Driven by Solar

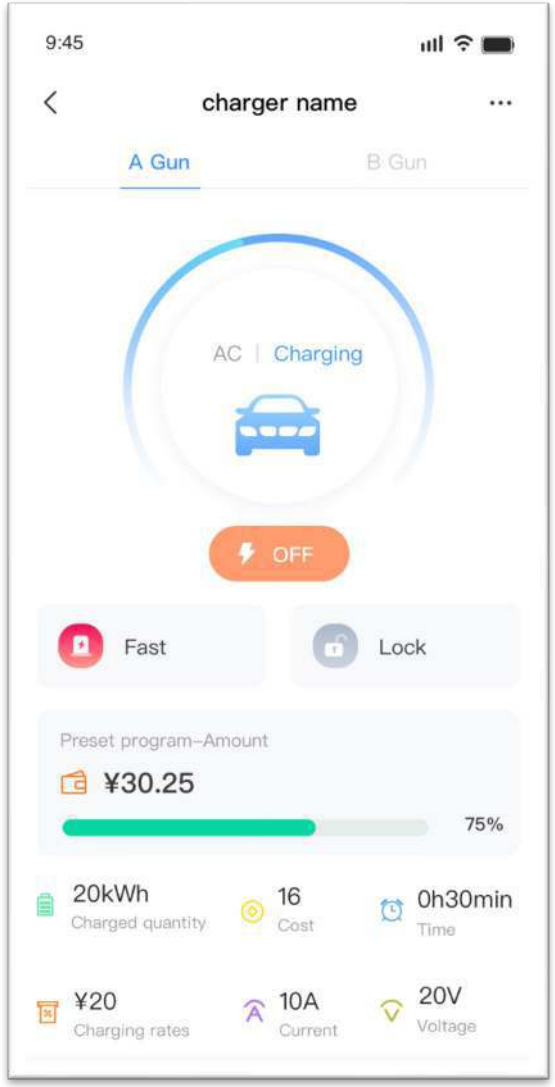
Driven by Solar

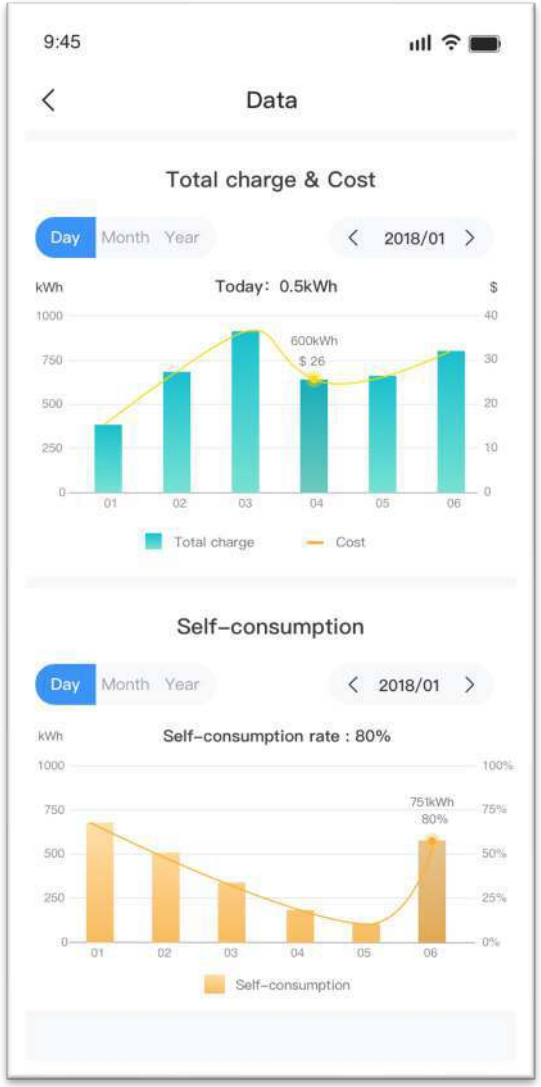
Charge EV with 100% renewable energy by surplus solar power, maximize the benefits of your solar system

Leading Features – Smart Management

Remote Control and Smart Scheduling

- Remote control and monitor the real-time status of charging
- Smart scheduling by multiple working modes
- Remote firmware upgrade by OTA technology





Leading Features – Extreme Safety

Overall Protection

The overall protection of the THOR EV charger guarantees the operation safety and reliability

Leading Features – Full Flexibility

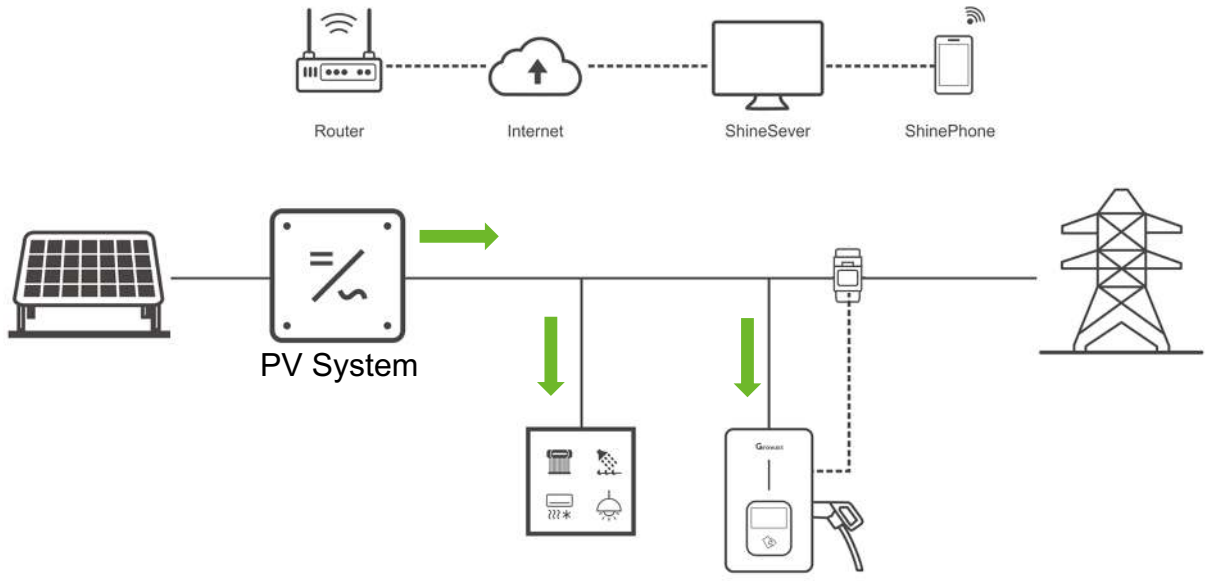
Compatible with ALL Branded EV

THOR EV Charger is highly flexible and compatible with all branded EV thanks to its attached type 2 charging gun/interface

Leading Features – Full Flexibility

Compatible with Different Branded PV

THOR EV Charger is highly flexible and compatible with different brand of PV systems to charge your car with surplus solar power



Leading Features – Full Flexibility

Supports three different ways of charging activation, users can define freely for different scenarios

Plug and Play

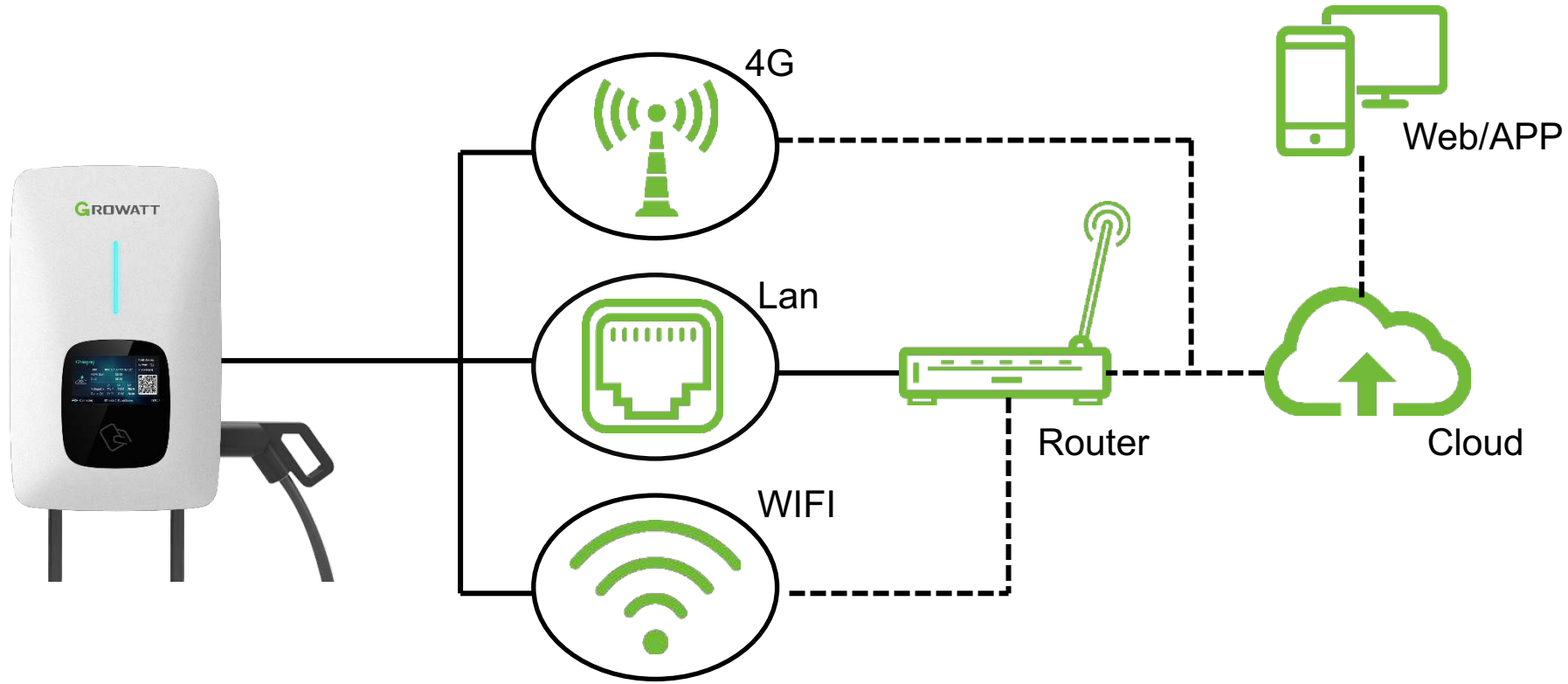
Mobile APP

RFID Card

* Three ways of charging activation will be available in Fast mode, and only mobile APP for Off-peak and PV Linkage modes

Leading Features – Full Flexibility

THOR EV charger provides flexible communication by Lan, WIFI or 4G*

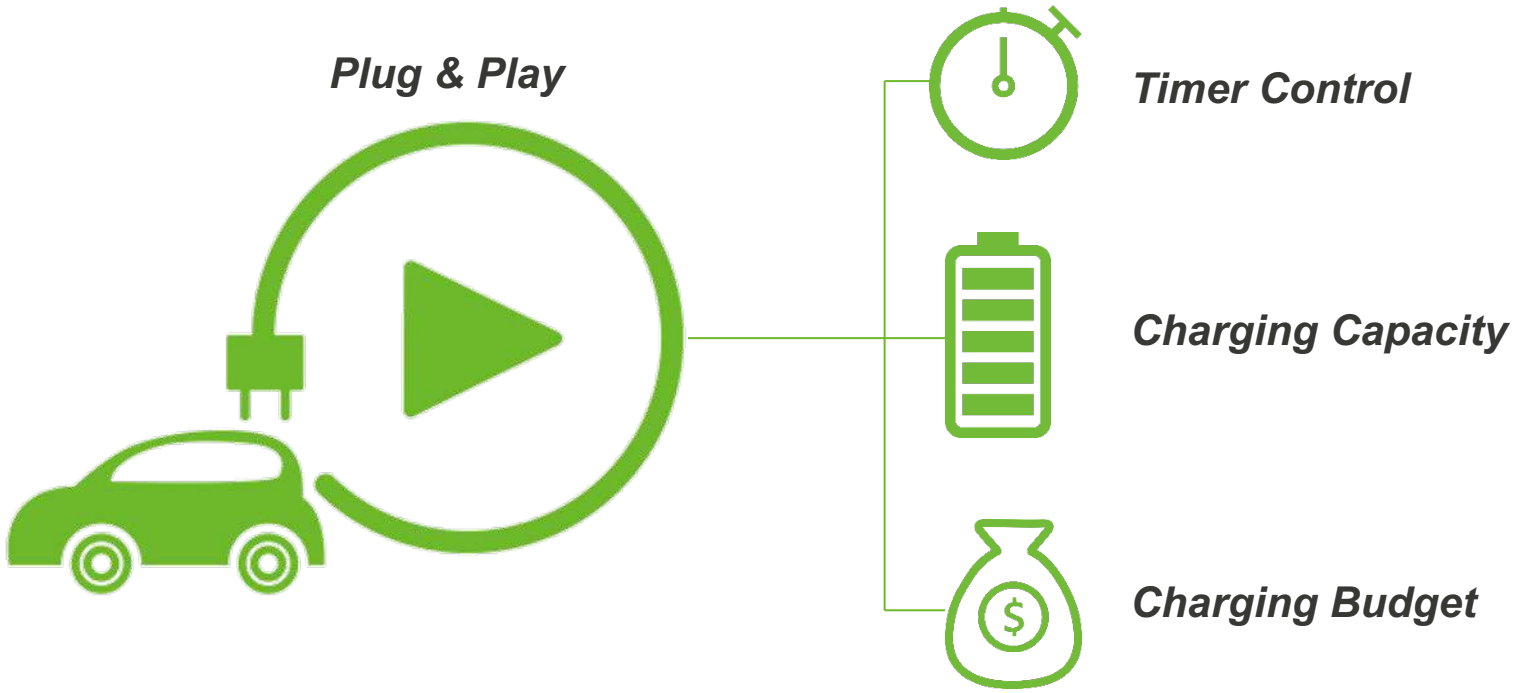


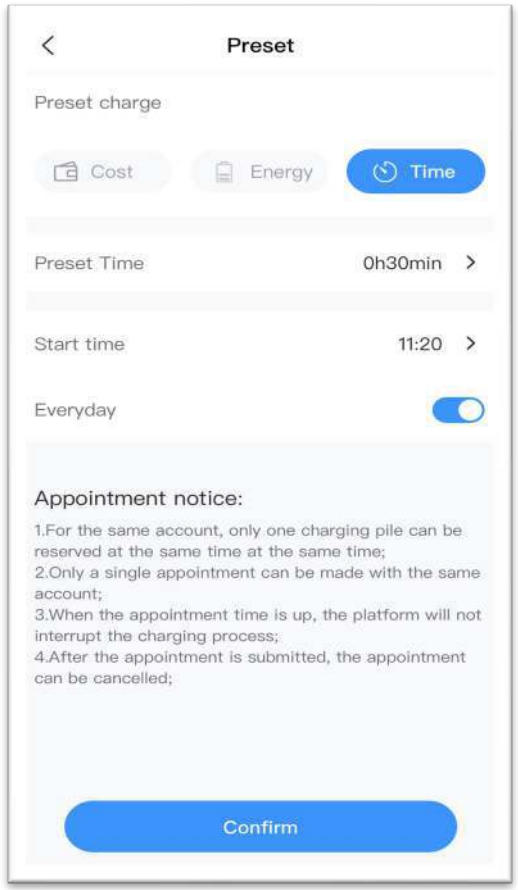
* Default model is WiFi version also with LAN port, please consult with regional sales if need 4G version.

Working Modes

Fast Mode

The EV will be charged at maximum power coming from a renewable energy source or simply from the grid, especially quickly if you're in a hurry, and support multiple control strategies of timer, charging capacity, charging budget.

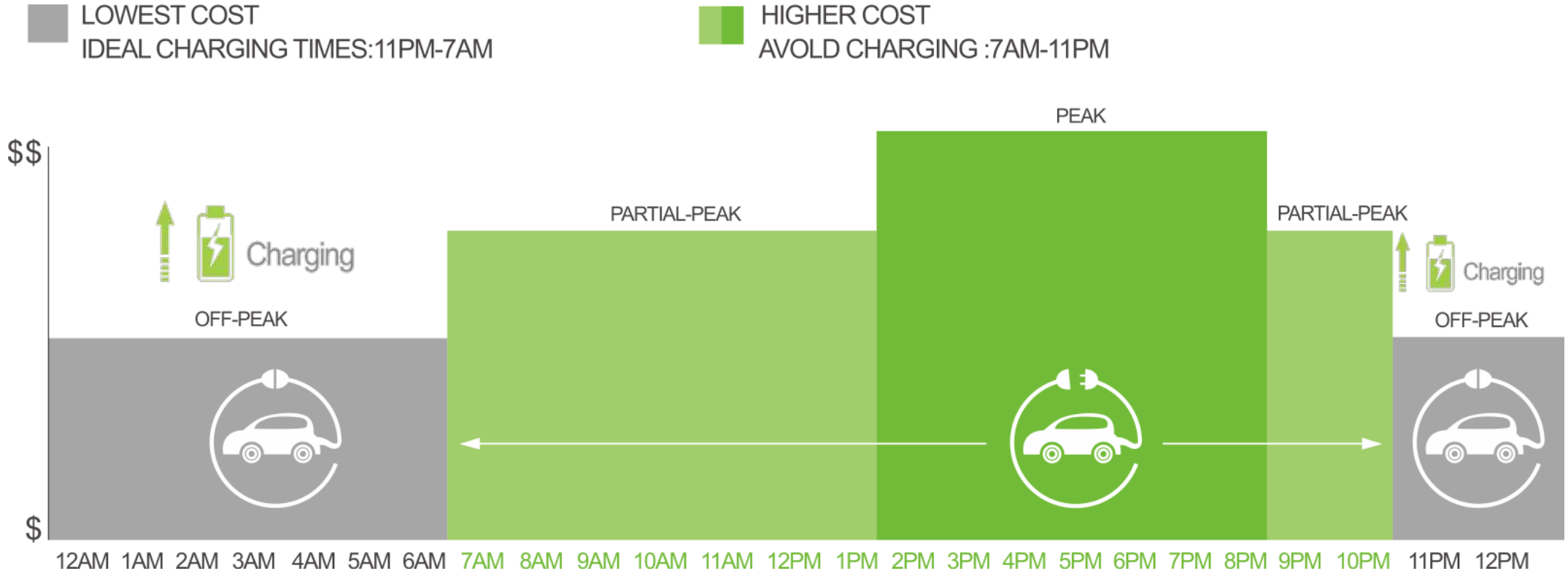




Working Modes

Off-Peak Mode

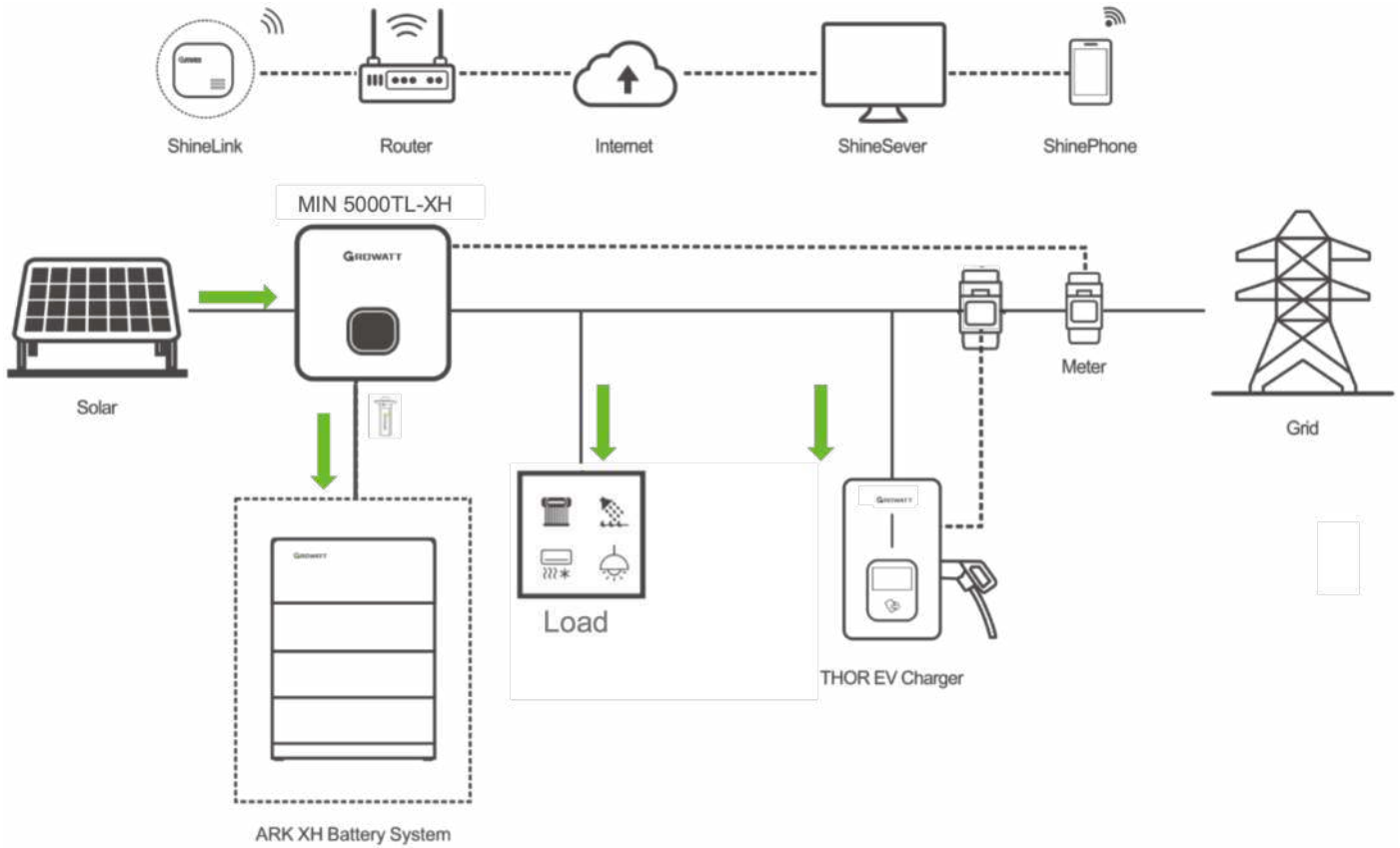
Once enable the Off-Peak mode, the EV charger will automatically charge the EV when it's at off-peak time to reduce the electricity bills.



Working Modes

PV Linkage Mode

Driven by solar, charge your car with 100% renewable energy, the EV will be charged by the surplus solar power dynamically, combining PV and EV charger together to maximize the solar self-consumption rate and cut your bill.



*The solar system cannot enable the zero export limitation function if enabling the PV linkage mode of EV charger

Working Modes

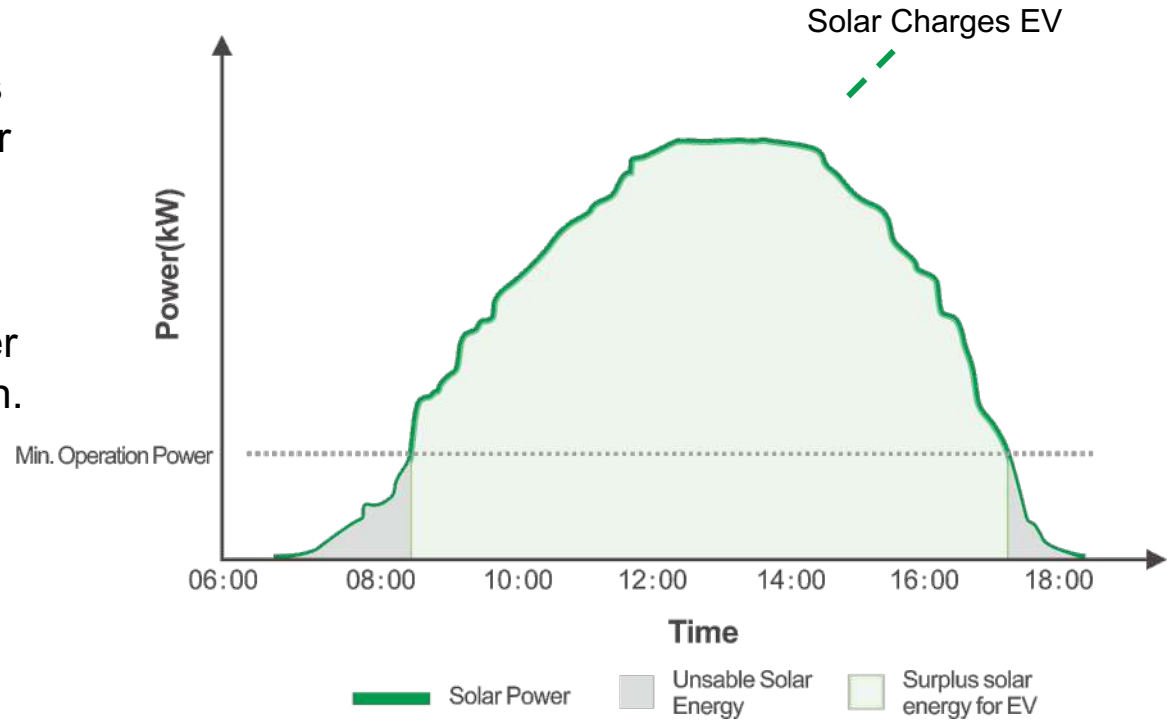
PV Linkage Mode

How it works?

(1) The EV will be charged dynamically only by surplus solar power when the surplus solar power is greater than Min. operation power*

(2) When surplus solar power is lower than Min. operation power, the EV Charger will use grid power to offset the shortage part and keep charging at Min. operation power.

(3) If disabling that importing power from the grid, then the EV charger will stop charging when the surplus solar power is lower than the Min. operation power.



*Min. operation power: 1.4kW for single phase EV charger, and 4.1kW for three-phase EV Charger

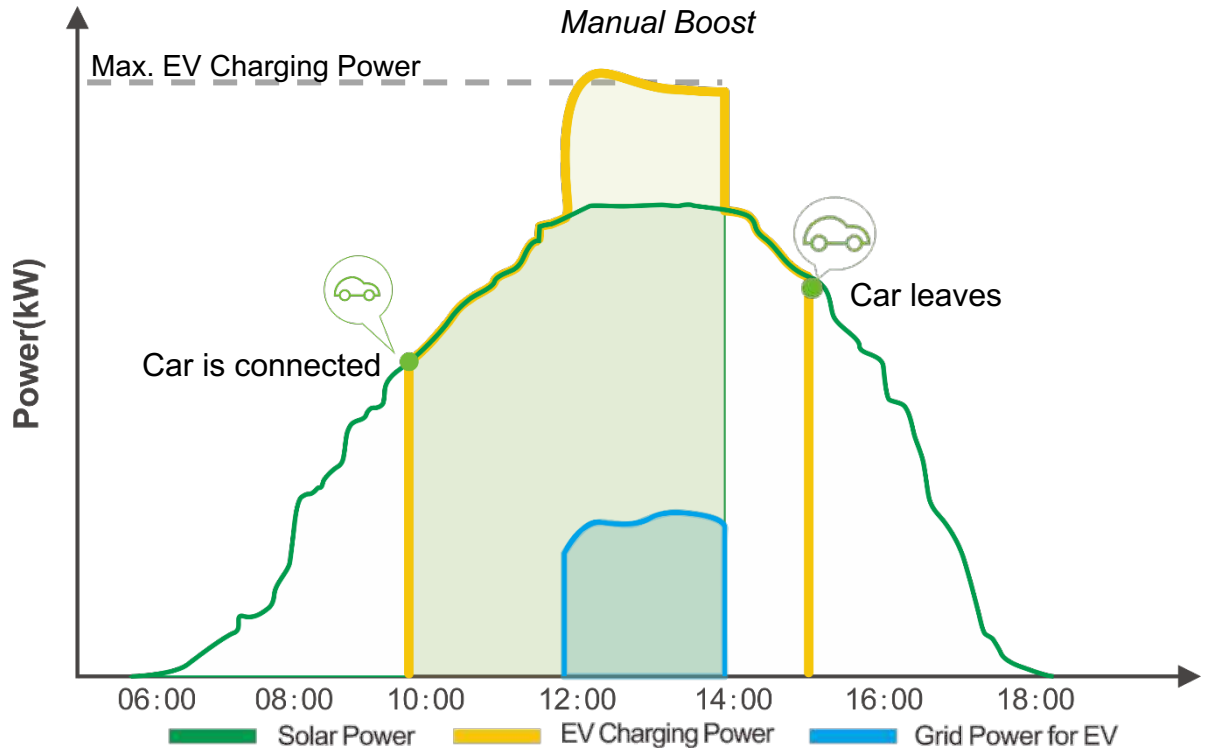
Working Modes

Manual Boost

It’s only available in PV Linkage mode, and be useful if you arrive home with an almost empty battery and want to charge the EV immediately to ensure the enough energy for a short trip if needed

How it works?

While in Manual Boost mode, EV will be charged at Max. power (Fast Mode) for a set period even drawing the power from the grid. After that, will recover back to the normal PV linkage mode.



Manual Boost Time: 12:00-14:00

Working Modes

Smart Boost

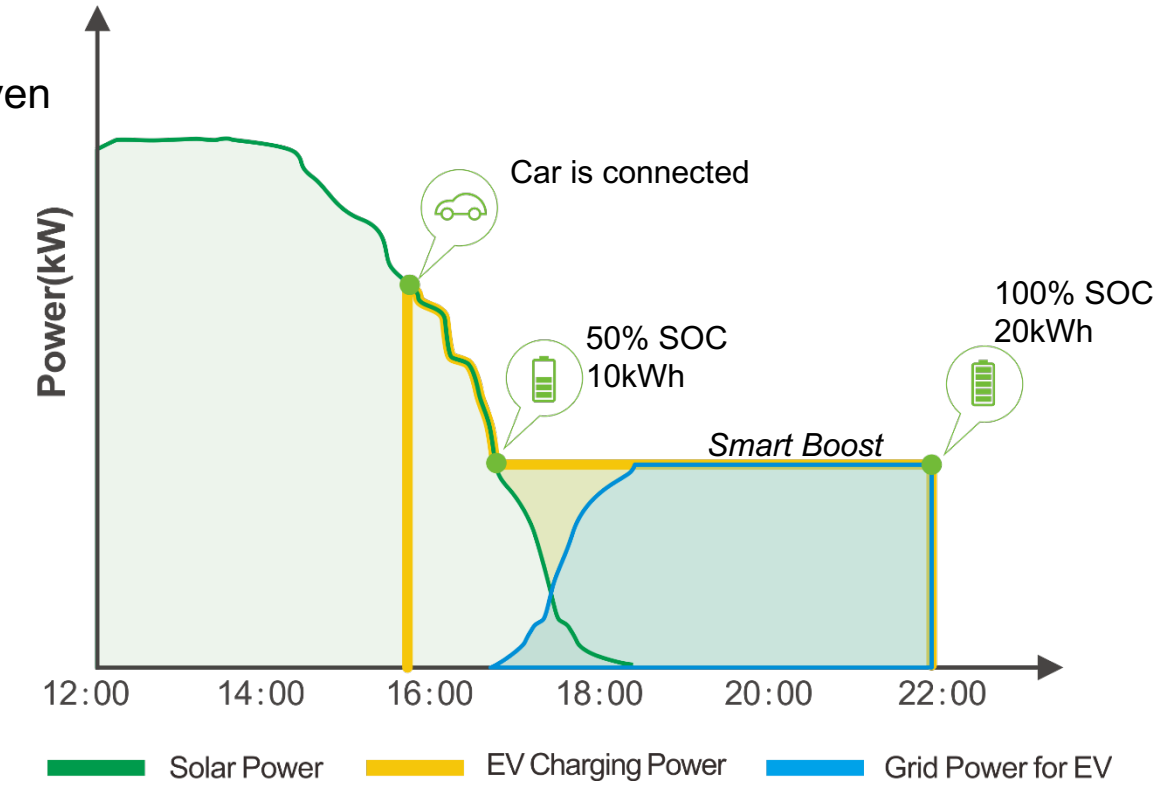
It’s only available in PV Linkage mode and Off-peak mode, and it guarantees EV’s battery capacity before a set time even if the solar energy is insufficient or off-peak time is short

How it works?

The Smart Boost will enable to charge the EV with a target kWh figured by a set time, it may draw the power from the grid to guarantee the EV’s battery capacity when the solar energy is insufficient or the off-peak time not long enough.

Example:

You wish to ensure there is enough charge (20kWh) in the EV to go out at 22:00, and The EV has been charged by surplus solar energy during PV Linkage mode with only 10kWh of charge accumulated. Because you activated the smart boost, then the THOR EV Charger will automatically boosted the charge to the required 20kWh by 22:00

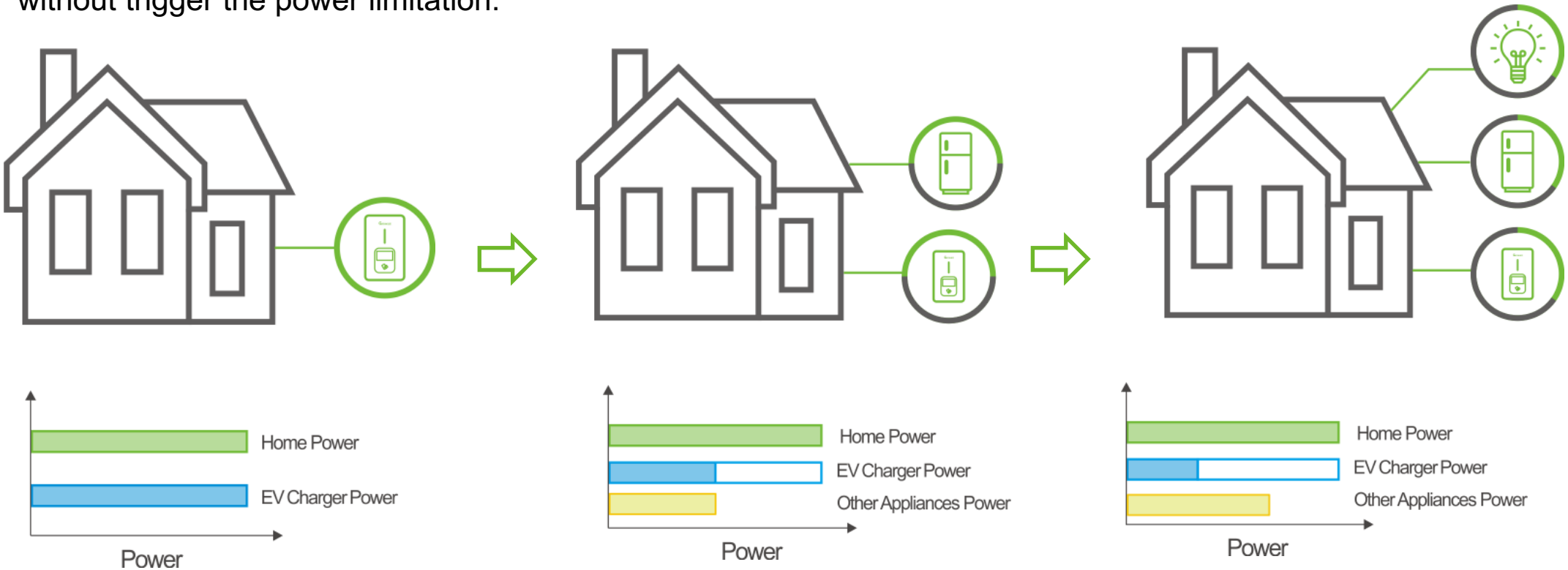


Smart Boost : 20kWh of charge before 22:00

Working Modes

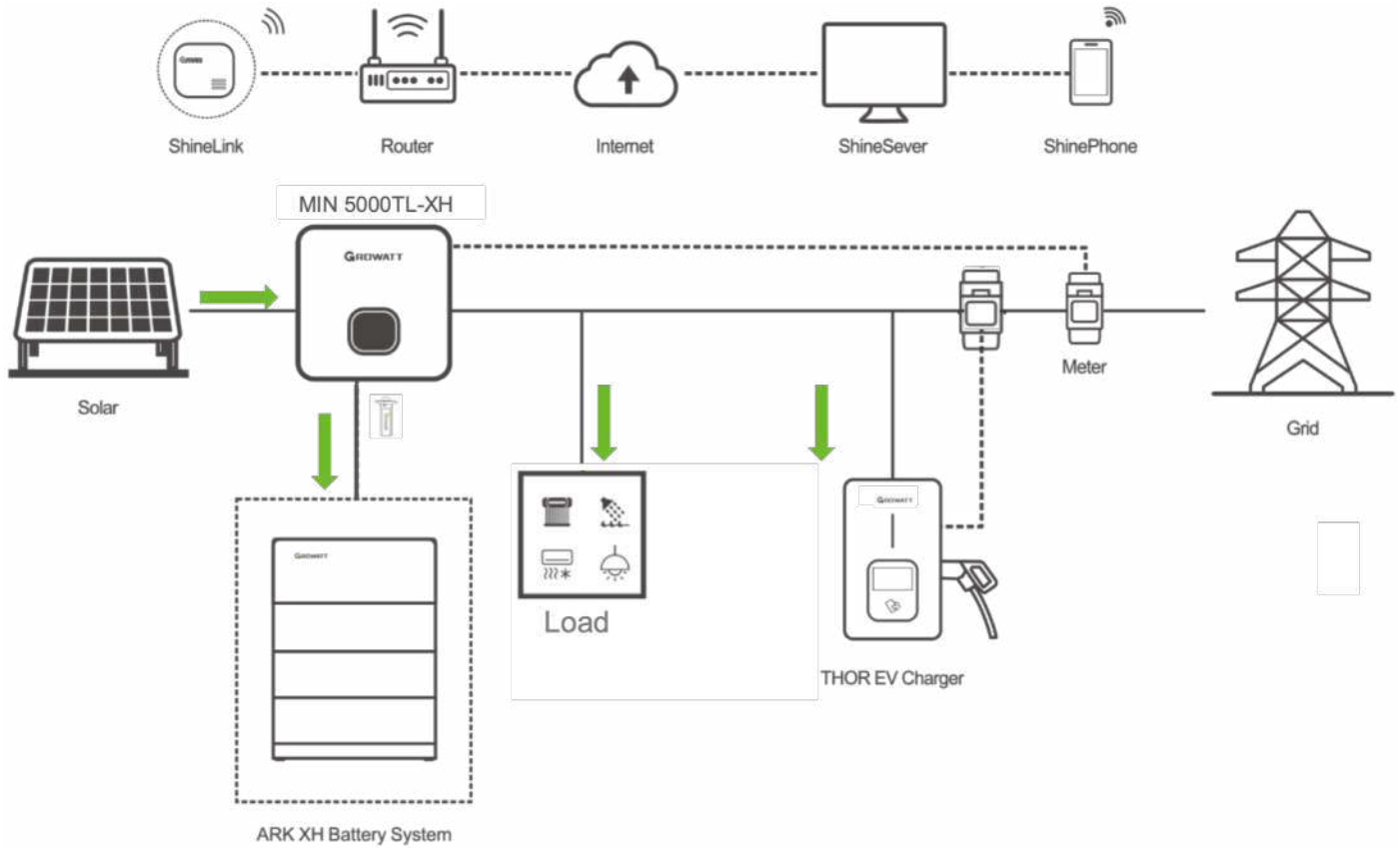
Load Balancing

The EV Charger offers power balancing function at home, the EV charger can read the incoming power to the house with an additional CT. Then the EV charger will adjust its charging power dynamically according to the home power to avoid exceeding the limited point, always charge your car at the maximum charging speed without trigger the power limitation.



Scenario 1: Solar + Storage + EV Charger Demo System in China

Application Scenario:
Battery store surplus solar power during the day time and make it available for consumption at night. Additionally, EV could support the PV Linkage mode transportation and also be used as an additional larger storage option.



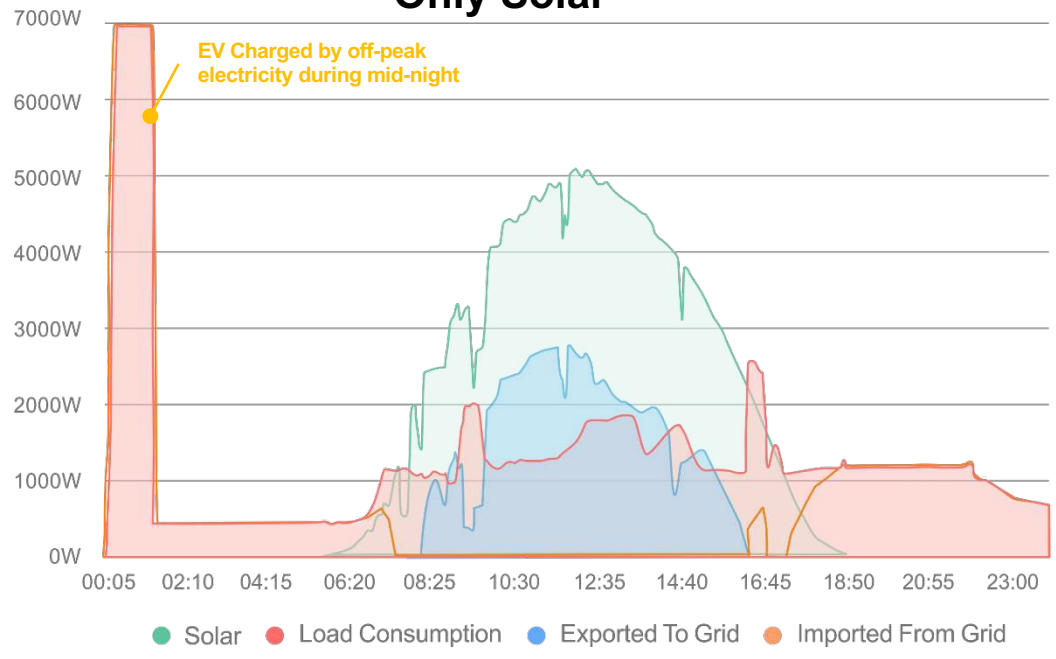
Device List:

- THOR 7kW smart EV charger
- 5kW solar system
- 7.68kWh ARK Lithium Battery
- GroHome energy management platform

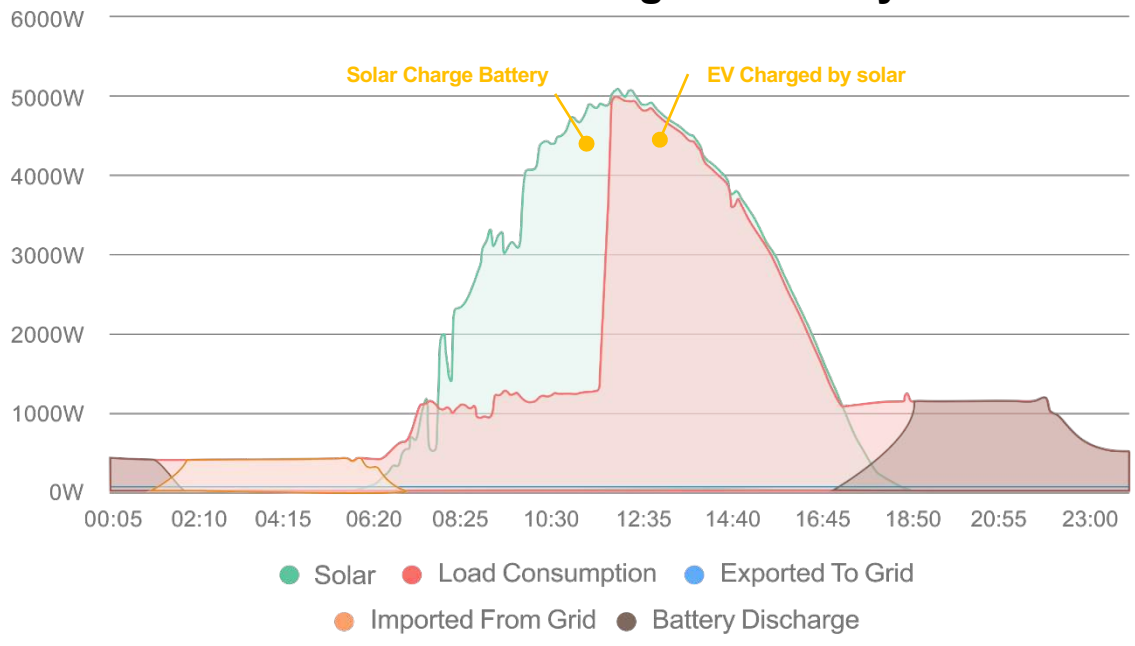
*The system is installed as the demo in Growatt HQ office of Shenzhen, China

Scenario 1 : Boost Solar Self-consumption Rate and Gain More Energy Saving

Only Solar



With Smart EV Charger + Battery



System	PV Generation /kWh	PV Self-consumption/kWh	Export to grid /kWh	Import from grid/kWh	Total consumption/kWh	PV Self-consumption rate	PV consumption/ Total consumption
Only solar	23.1	7.2	15.9	21.2	28.4	31%	25%
With EV Charger + Battery	23.8	23.3	0.5	5.5	28.8	98%	81%

*With solar, only 7.2kWh of PV generation consumed in the house, self-consumption rate only 31%; however, if add smart EV charger and battery storage, there would be 23.3kWh of PV generation consumed, boost the PV self-consumption rate up to 98%.

With EV charger and storage, the PV energy occupies 81% of the total consumptions, **GroHome and storage bring additional 56% energy savings for this case compared with 25% PV energy ratio of only solar system.**

Scenario 2: Solar + Storage + EV Charger System in Adelaide, Australia

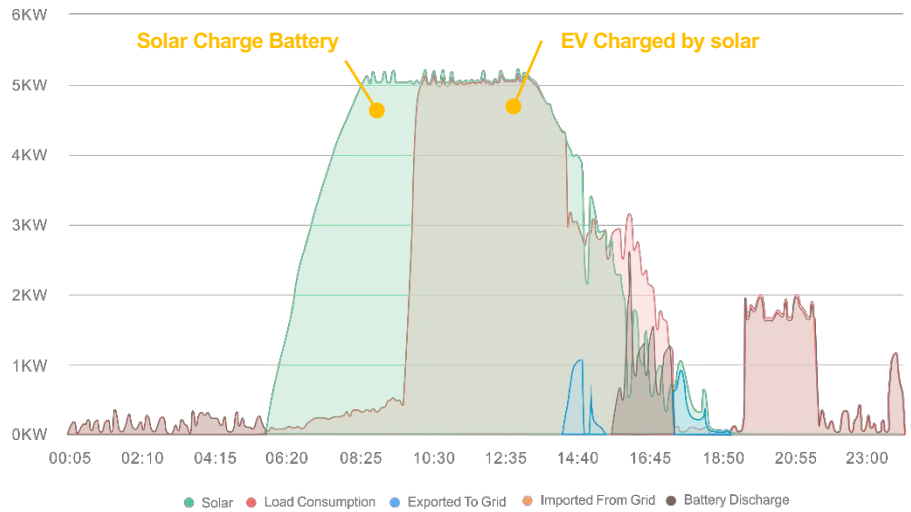
Application in Australia

This Australian user installed the 5kW solar, with 10.2kWh storage battery as well as 7kW smart EV charger.

Device List:

- MIN 5000TL-XH
- 10.2kWh ARK Lithium Battery
- THOR 7kW smart EV charger
- GroHome energy management platform

*The system is installed in Adelaide, South Australia



According to below table, PV generation is 34.4kWh, 33.2kWh of PV energy consumed in the house, self-consumption rate up to 97%. Household total consumption is 33.4kWh, 99% energy from solar, only import 0.2kWh small energy from the grid. And the battery discharged energy is 6.6kWh, EV Charger consumption is 22.5kWh.

Supposing only solar without battery storage and smart EV charger PV linkage, that means customer would import energy from grid to charge the EV during off-peak period in the mid-night. The self-consumed PV energy would be only 33.2-6.6-22.5=4.1kWh, PV energy occupies only 12% of total consumptions. Compared with only solar, **battery storage and GroHome system boost the PV energy ratio from 12% to 99%, gain 87% additional energy savings.**

System	PV Generation (kWh)	PV Self-consumption (kWh)	Export to grid (kWh)	Import from grid (kWh)	Battery Discharge (kWh)	EV Charger consumption(kWh)	Total consumption (kWh)	PV Self-consumption rate	PV Consumption/ Total Consumption
With EV Charger + Battery	34.4	33.2	0.9	0.2	6.6	22.5	33.4	97%	99%

*Daily energy generation and consumption data on Dec. 30, 2020

THANKS

Growatt New Energy