



CREATE A NEW ERA OF SMART ENERGY

Energy Storage Solutions

PV + STORAGE SOLUTION

3-50kW



ET (HV)

5-10kW



Maximize
Self-Consumption



UPS-Level
Switching



Wide Battery
Voltage Range



100% Unbalanced
Output



BH (HV)

1-6kW



SBP (LV)

3.6/5kW



BT (HV)

5-10kW



BTC (HV)

50kW



EH (HV)

3.6-6kW



ES (LV)

3.6-5kW



EM (LV)

3-5kW



Lynx Home U Series (LHV)

5.4-32.4kWh



Lynx Home S Series (HV)

7.68-20.48kWh
North America Excluded



Lynx Home F Series

High Voltage Battery

LITHIUM BATTERIES



Module Auto
Recognition



Remote Diagnosis
& upgrade



Auto under-voltage
Reboot



IP65 for indoor or
outdoor installation



Safe & Reliable

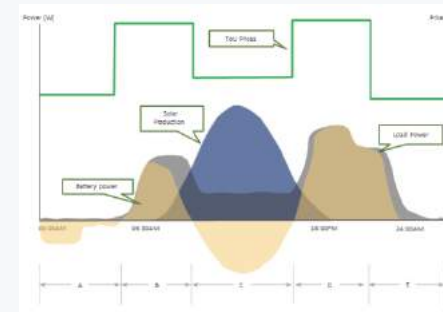
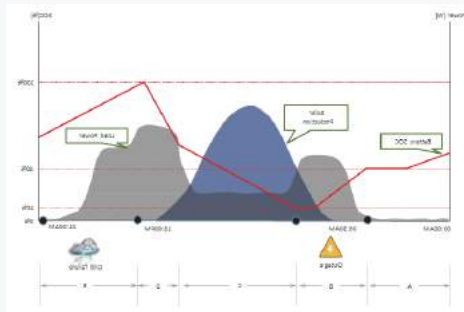


Ultra Rapid Battery
Charge




Storage Application Scenarios

Three Main Application Scenarios

- Enhance self-consumption: the battery system stores excess power generated from the PV array to inject solar power to the grid and avoid restricting solar production. When solar production is weak, the battery will discharge to support load consumption.
- Provide backup for critical loads: The battery stores solar power or takes energy from the grid for energy requirements during grid outage. Loads such as refrigerators, routers, lamps, computers and other critical appliances can be powered when the grid fails. The system can automatically switch to backup mode within 8 milliseconds.
- Time of Use (ToU): By setting the charging and discharging time, the battery can be charged using electricity generated at off-peak rates and discharged to power loads during peak hours.



Hybrid inverters – Overview

| | EM Series | ES Series | EH Series | ET Series |
|--------------------------------------|---|--|---|---|
| |  |  |  |  |
| Nominal AC output | 3-5 kW | 3.6-5kW | 3.6-6kW | 5-10kW |
| Grid Connection | 1phase | 1phase | 1phase | 3phase |
| Lithium Battery | Low Voltage | Low Voltage | High Voltage | High Voltage |
| MPPTs | 2 - 1 | 2 | 2 | 2 |
| Max. Discharge / Charge Power | 2.3kW | 3.6-5 kW | 3.6-6 kW | 5-10 kW |
| Max. Backup load | 2.3kW | 3.6-4.6 kW | 3.6-6 kW | 5-10 kW |

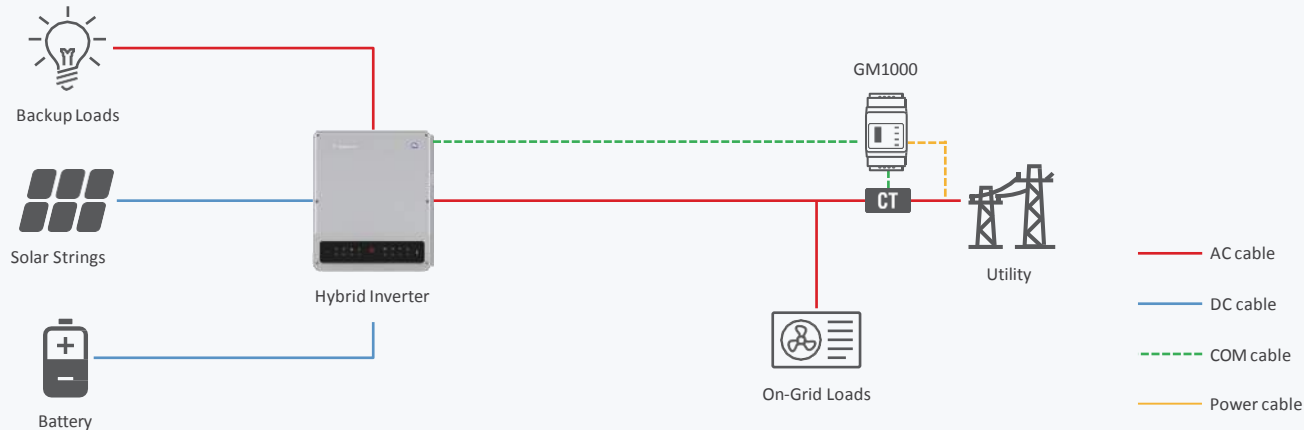
Standard Features

- Wi-Fi Communication
- CAN Battery Communication
- App based commissioning via PV Master
- Integrated AC/DC SPD Type III
- DC Switch
- Smart Meter for Power Control




Hybrid Solutions

Operation Modes & Applicable Models

Solar power will support loads first then charge the battery. Any excess power will be exported to the grid and can be limited with GM1000/GM3000.



Retrofit inverters – Overview

| | SBP Series | BH Series | BT Series |
|--------------------------------------|---|---|---|
| |  |  |  |
| Nominal AC output | 3-5kW | 3-6kW | 5-10kW |
| Grid Connection | 1phase | 1phase | 3phase |
| Lithium Battery | Low Voltage | High Voltage | High Voltage |
| Max. Discharge / Charge Power | 3-5 kW | 3-6 kW | 5-10 kW |
| Max. Backup load | 3-5 kW | 3-6 kW | 5-10 kW |

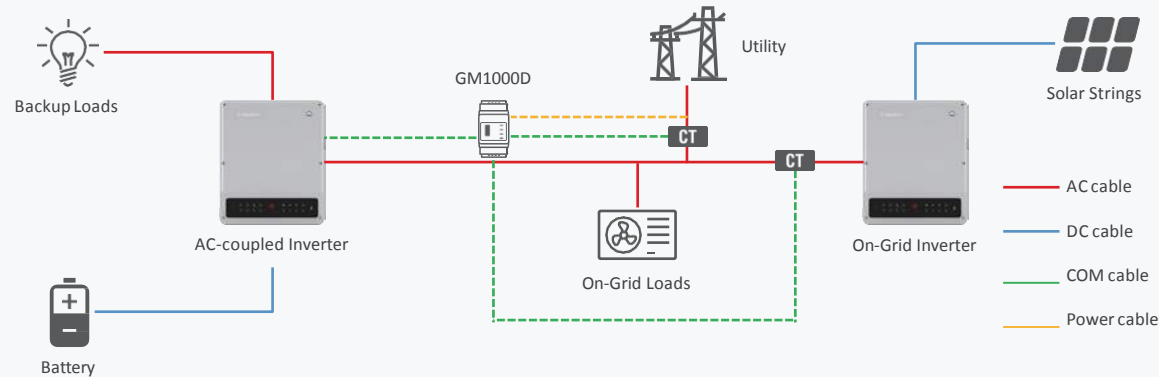
Standard Features

- Wi-Fi Communication
- CAN Battery Communication
- App based commissioning via PV Master
- Integrated AC/DC SPD Type III
- Smart Meter for Power Control

AC-coupled Retrofit Solutions

Operation Modes & Applicable Models

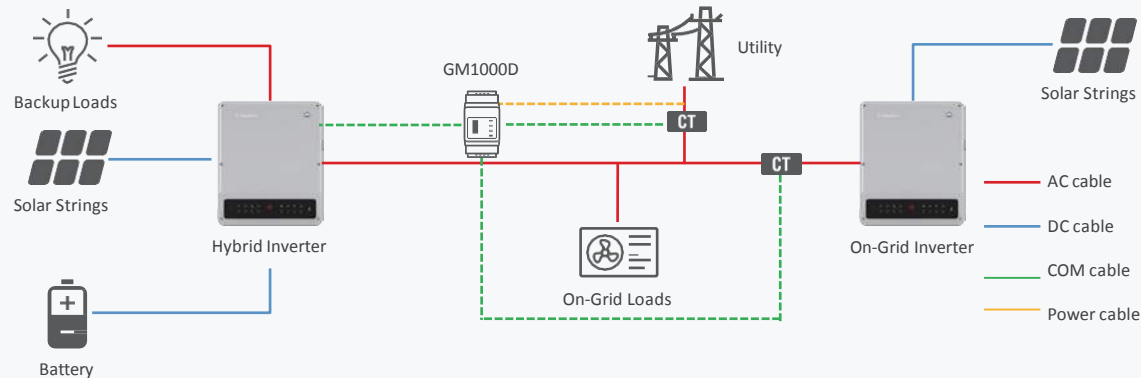
the default setting in AC-coupled retrofit inverters prioritizes PV generation to power the loads, then charges the battery and finally exports any surplus power to the grid, which can be limited with GM1000D/GM3000. One major difference compared to a newly installed hybrid system is that the PV will not work during the daytime if there is an outage .



AC-coupled + DC-coupled Solutions

Operation Modes & Applicable Models

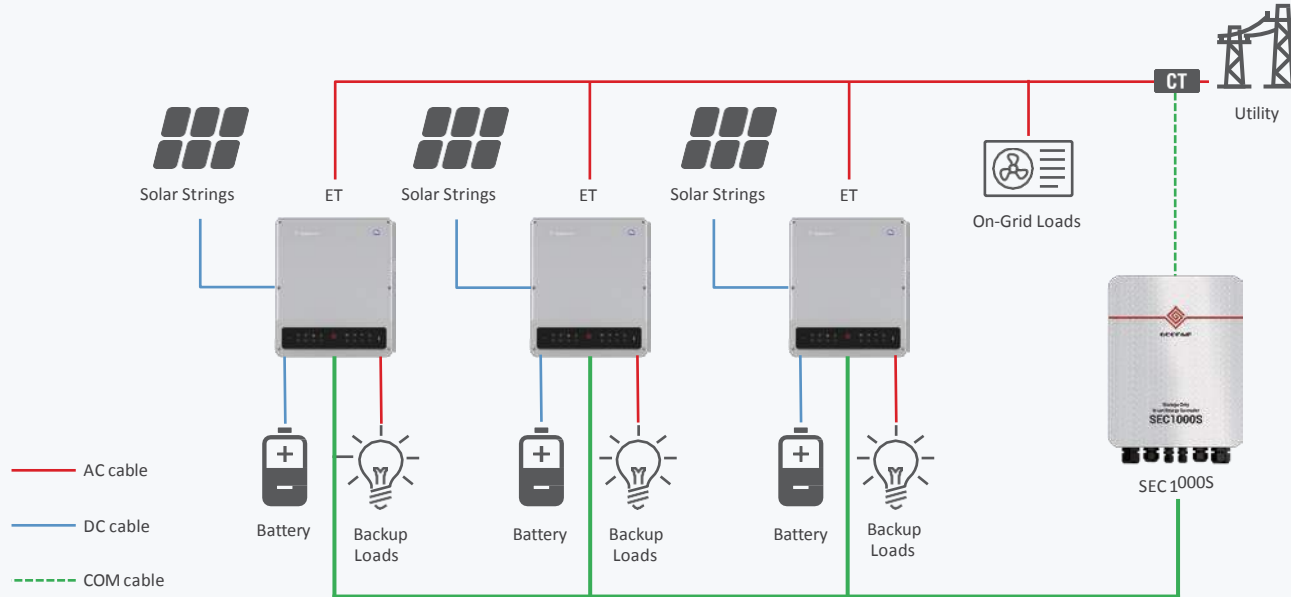
This system works in a similar way to hybrid system: solar energy first supplies the loads, then charges the battery and finally feeds the grid. If the grid fails, the on-grid inverter will not work and on-grid loads will not be available during the outage. Backup loads can still be powered by discharging the battery with PV generation .



Paralleling Solution

Operation Modes & Applicable Models

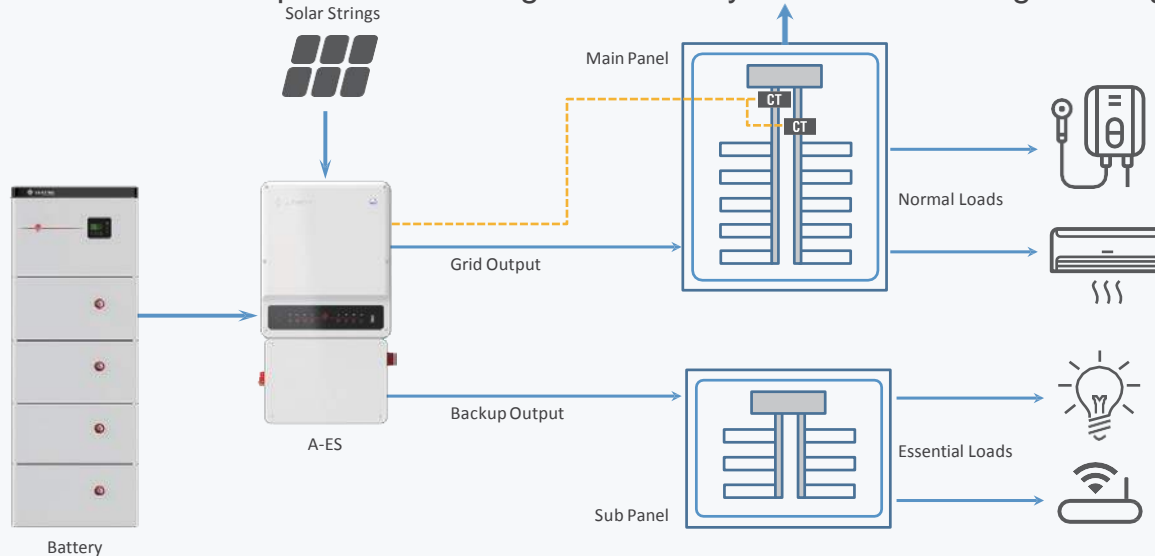
paralleling scenario: when the grid is available, the PV system, the batteries and the loads share the energy in an integrated system. In contrast, when an outage occurs, the paralleled system breaks into independent units in which the PV and the batteries supply backup power only to the corresponding loads .



Partial Backup - DC-coupled (hybrid) Solutions

Operation Modes & Applicable Models

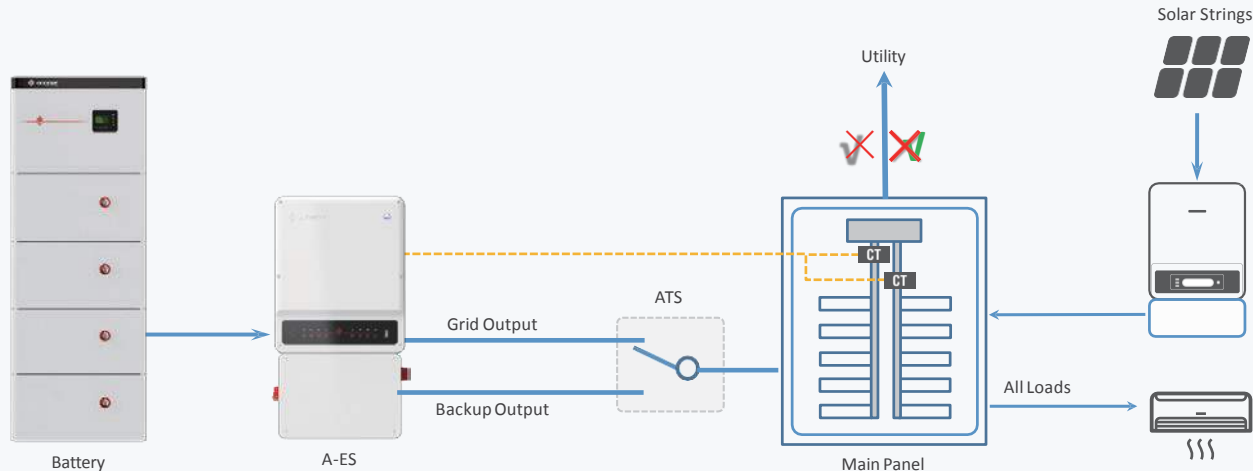
In Partial Backup solution, all household loads are divided into two parts: standard Loads (on-grid side) and essential loads (backup side). The default setting prioritizes PV generation to supply the loads, then charges the battery, and any surplus power will be exported to the grid. The battery will discharge to support loads when PV power is insufficient. If battery power is insufficient, the system will take power from the grid to support the loads. Solar Power will power essential loads on the backup side and charge the battery in the event of a grid outage.



Full Backup - AC-coupled Solution

Operation Modes & Applicable Models

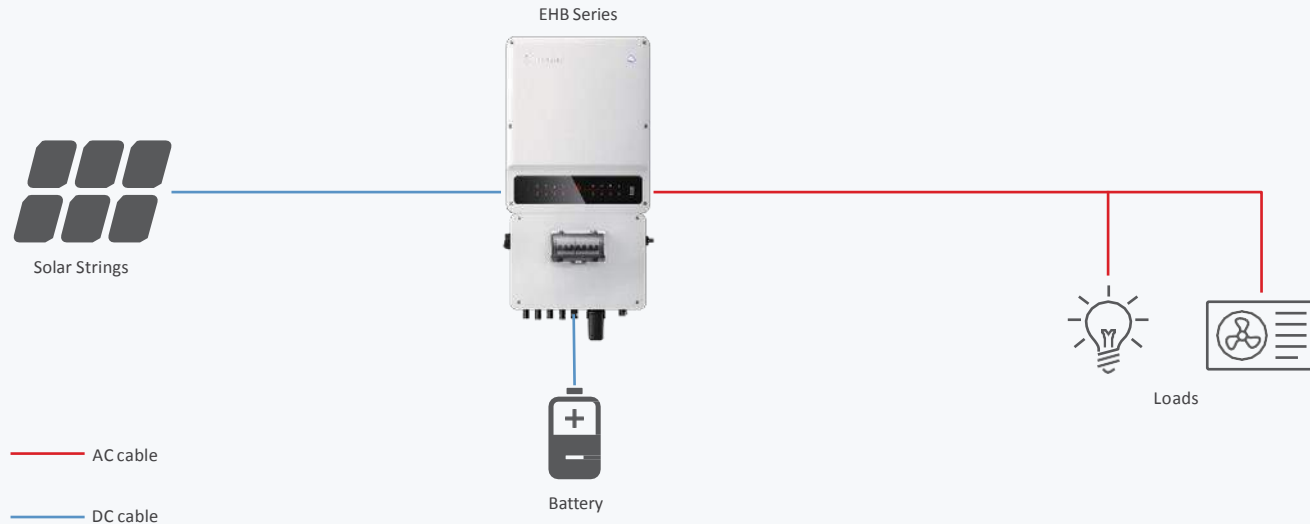
In Full Backup solution, all loads are connected to A-ES/ A-BP with an ATS (Auto Transfer Switch). Following a similar principle to the Partial Backup solution, the PV generation will first power the loads, then charge the battery and finally export any surplus power to the grid. If the grid fails, the ATS switches to backup output and all loads will be supplied by battery discharging. As long as the power grid is reconnected, the ATS will connect all loads to the on-grid side.



Off Grid Solution

Operation Modes & Applicable Models

EHB series provides up to 10kW single phase output for both off-grid and backup side. A 20% overload capacity makes it compatible with different types of loads. In off-grid mode, solar power will support loads first then charge the battery. If solar power is insufficient, the battery will discharge to power home consumption. Customers can set the Depth of Discharge (off grid) to avoid excessive battery discharging .



50kW

Three Phase






AC-Coupled Retrofit

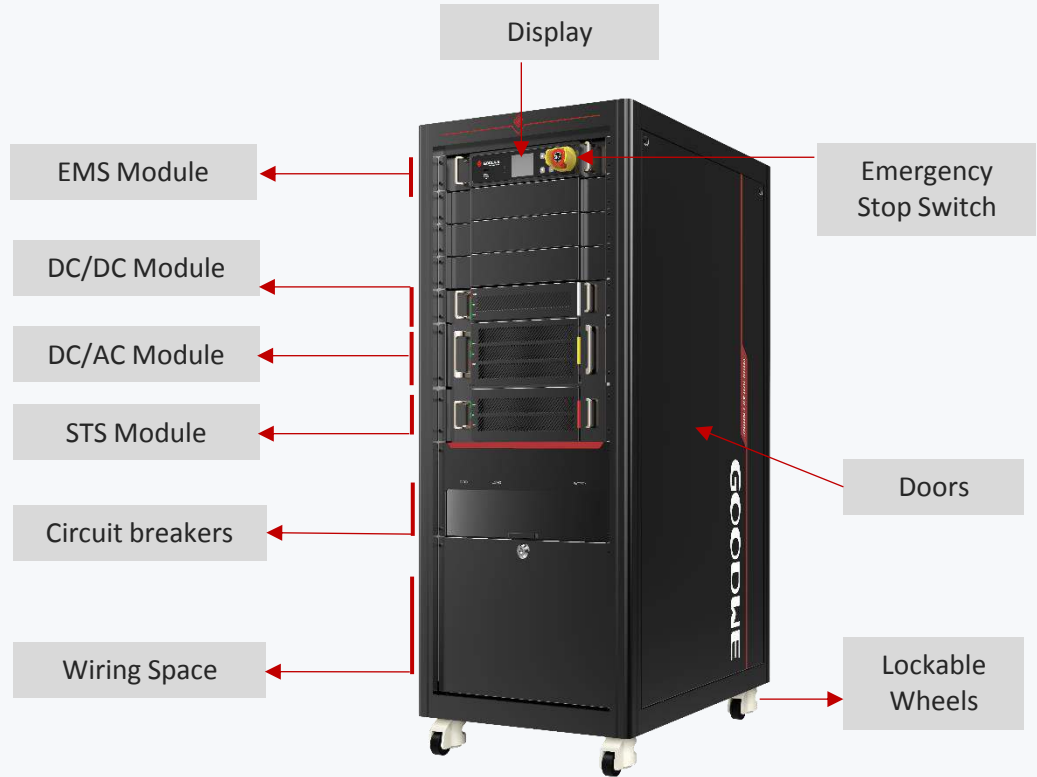
Commercial Storage Solution

BTC Series



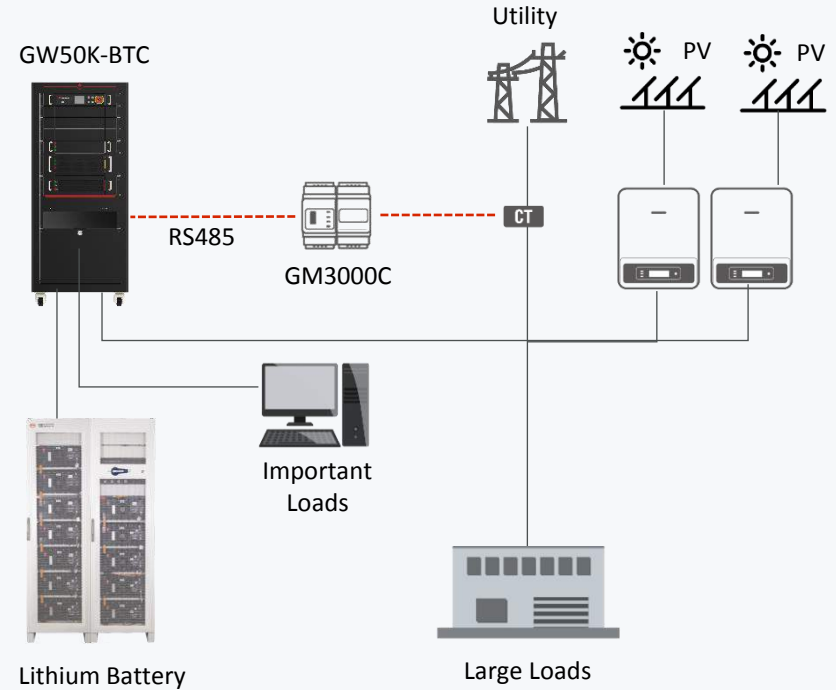
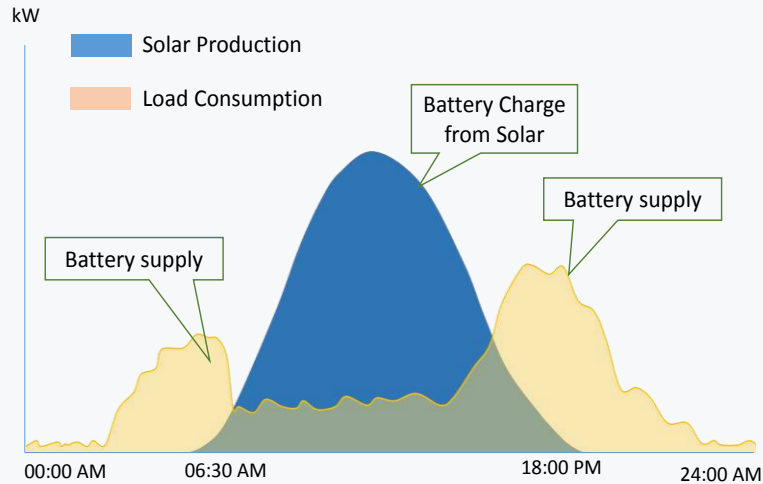
PCS Overview

-  **Adjustable Reactive Power**
-  **Built-in Remote Shutdown**
-  **Modularized Design**
-  **UPS-Level Switch Time**
-  **100% Unbalance Output**



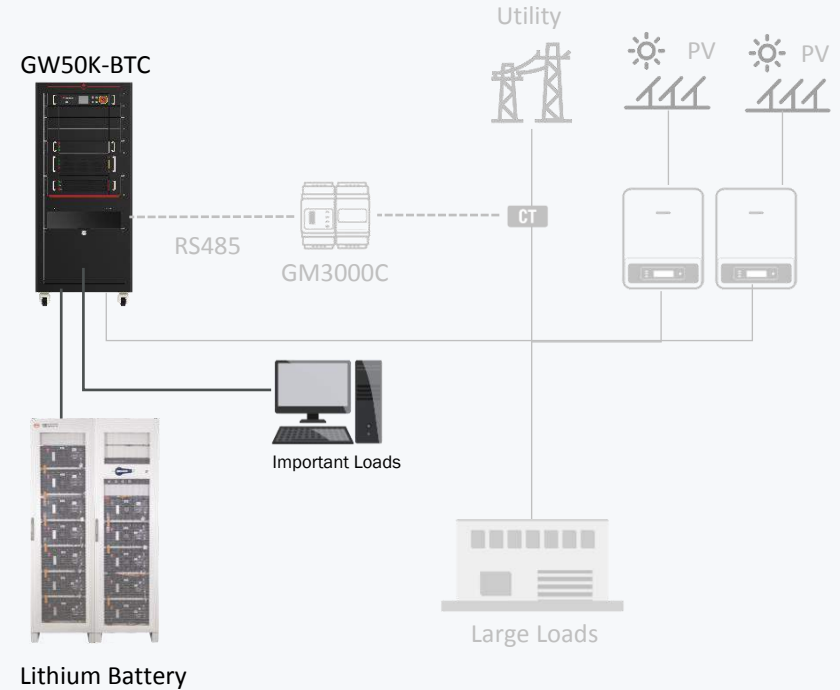
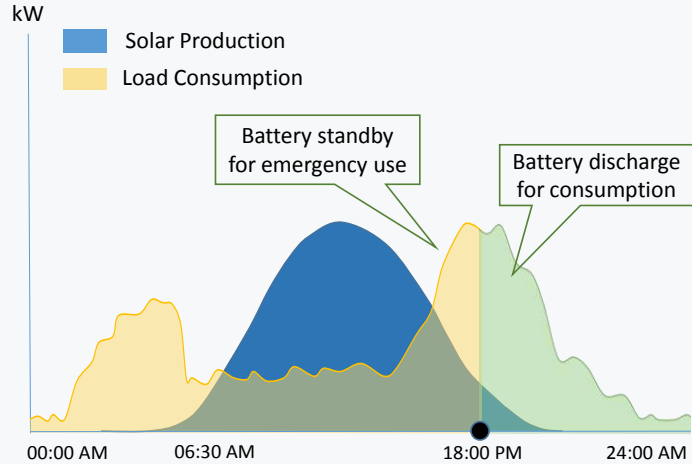
C & I Solutions – Self-Use

The Exceed solar power is stored in battery instead of exporting to public grid, and battery discharge to loads in priority if solar power is lower.



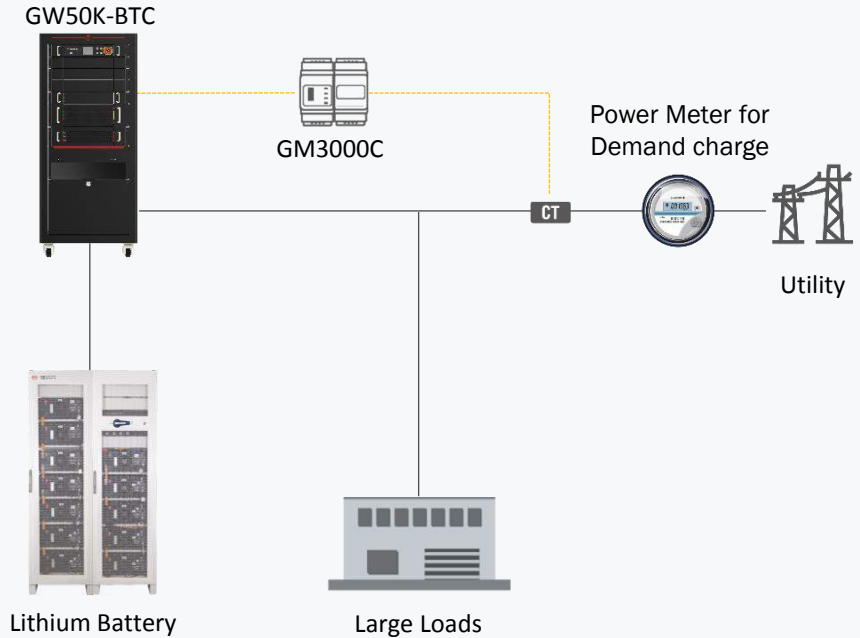
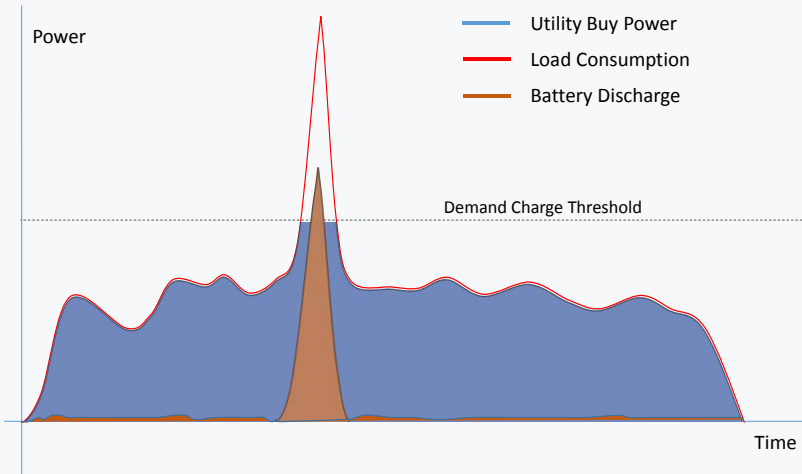
C & I Solutions – Backup Use

Battery could be fully charged and reserve for emergency use during blackout.



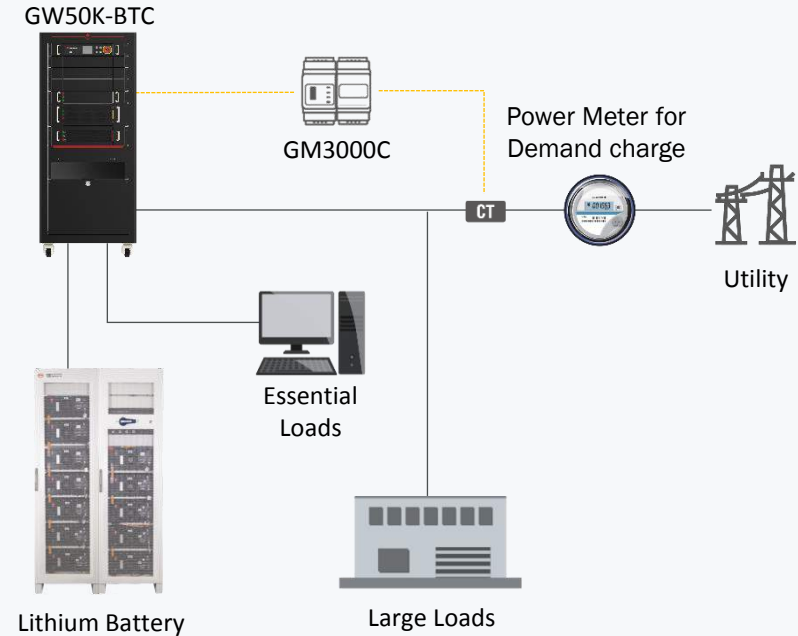
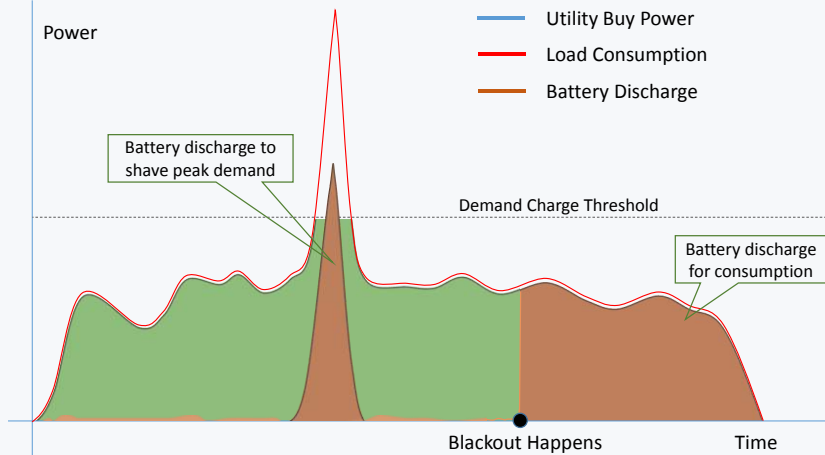
C & I Solutions – Peak-Shaving

Battery could be fully charged and reserve for emergency use during blackout.



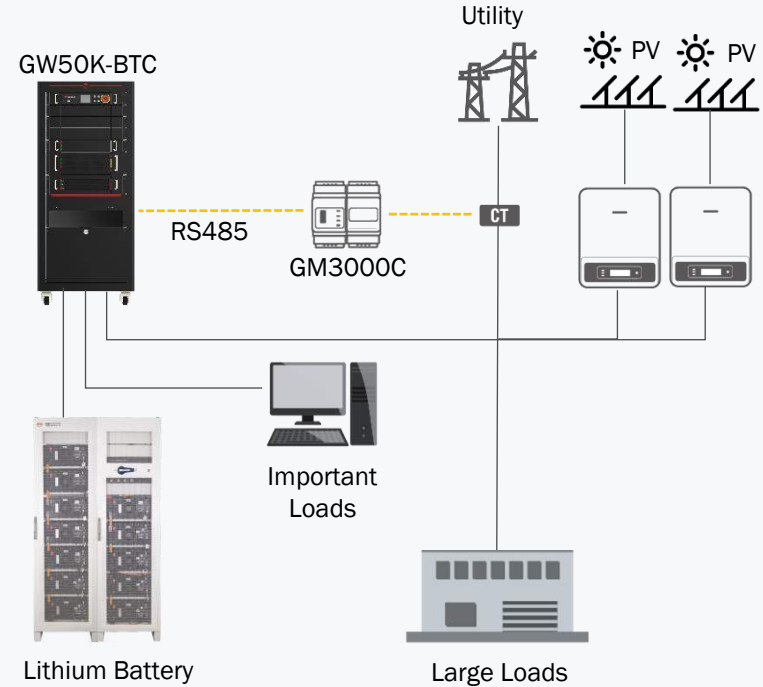
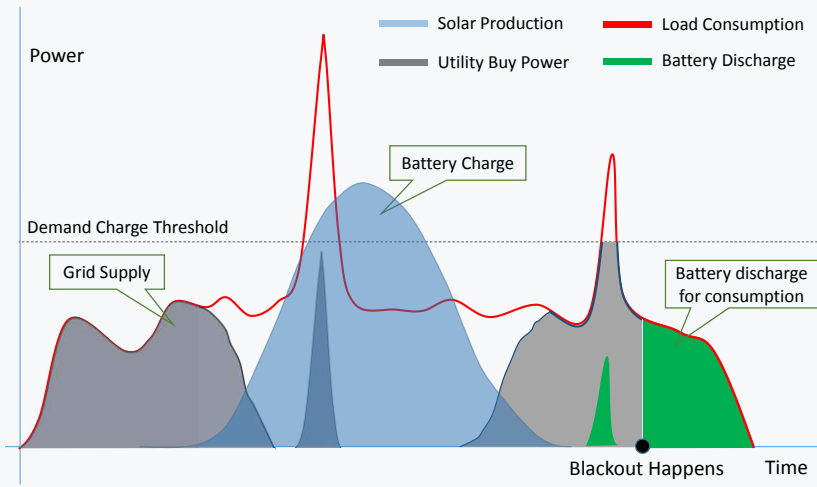
C & I Solutions – Peak-Shaving + Backup Use

Battery could be fully charged and reserve for emergency use during blackout or discharge to shave peak demands.

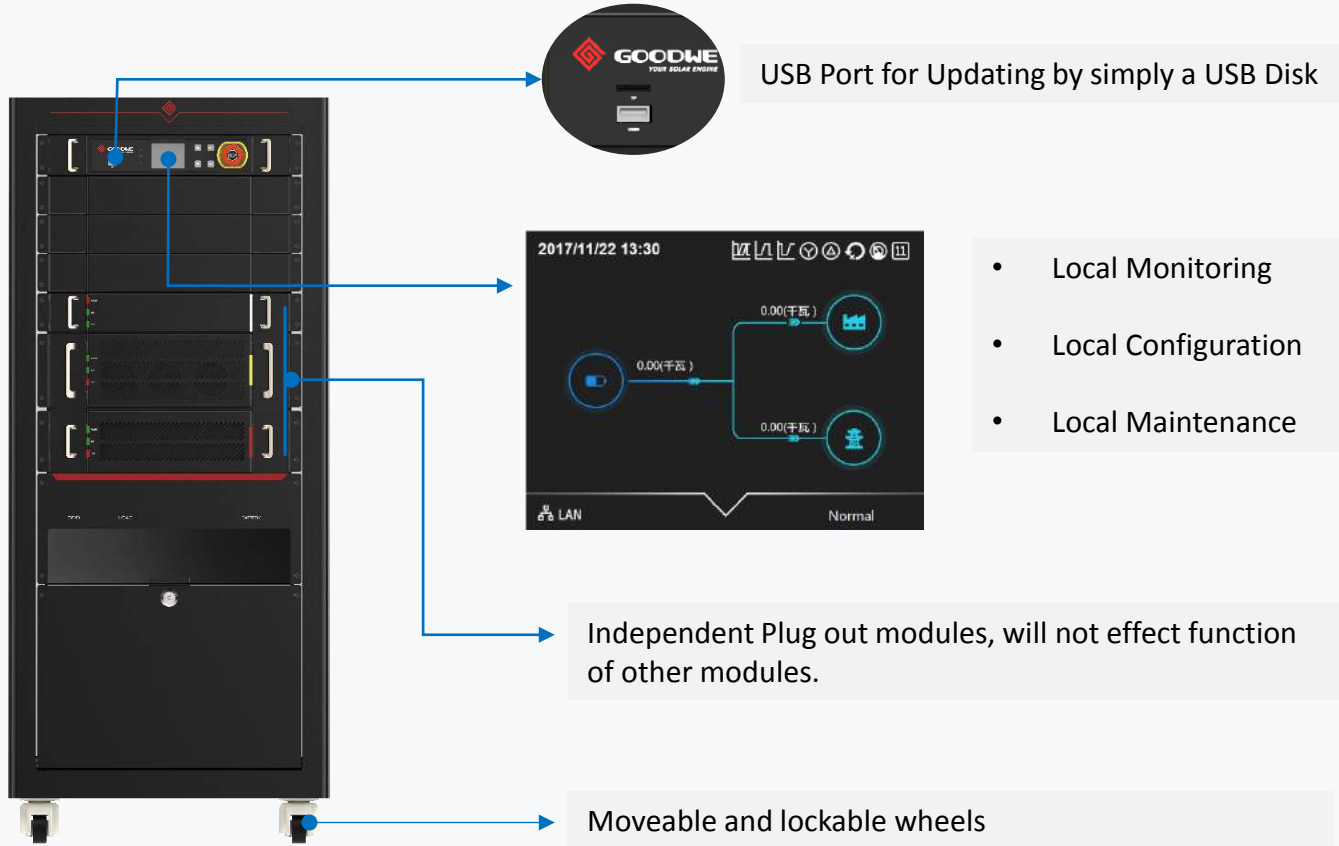


C & I Solutions – Peak Saving + Backup + Self-Use

The solar production supply consumers in priority and charge battery with exceeded power instead of exporting to public grid, and battery discharge only when peak consumption happens or during blackout for peak-shaving or emergency power supplement.



Convenient Maintenance



USB Port for Updating by simply a USB Disk

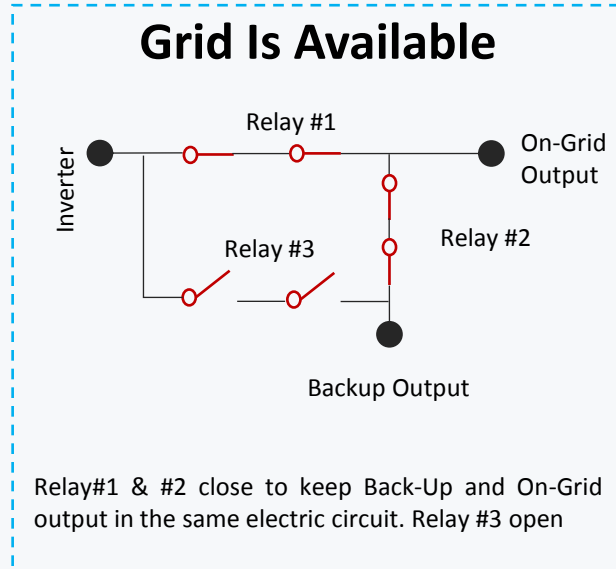
2017/11/22 13:30

- Local Monitoring
- Local Configuration
- Local Maintenance

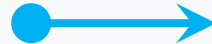
Independent Plug out modules, will not effect function of other modules.

Moveable and lockable wheels

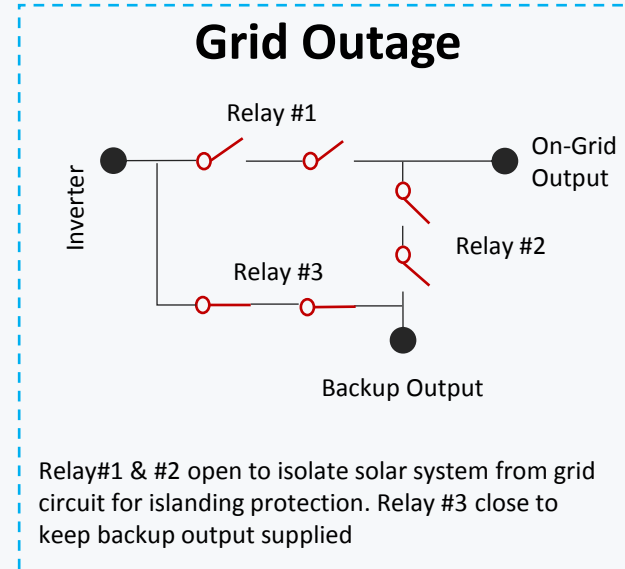
UPS-Level Switch Time



< 10ms



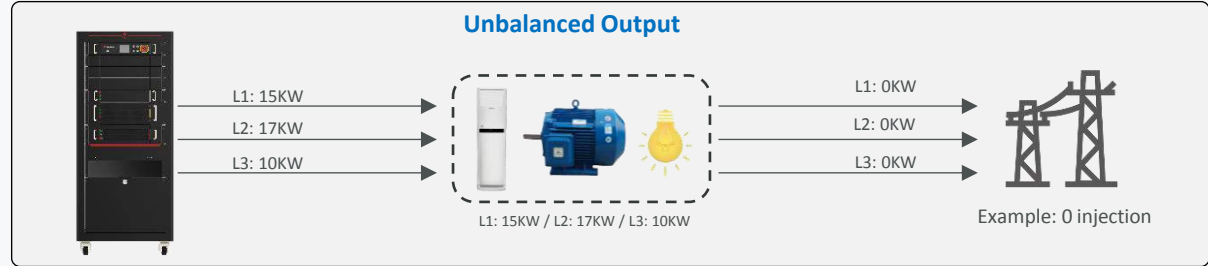
No supply break during a sudden grid outage



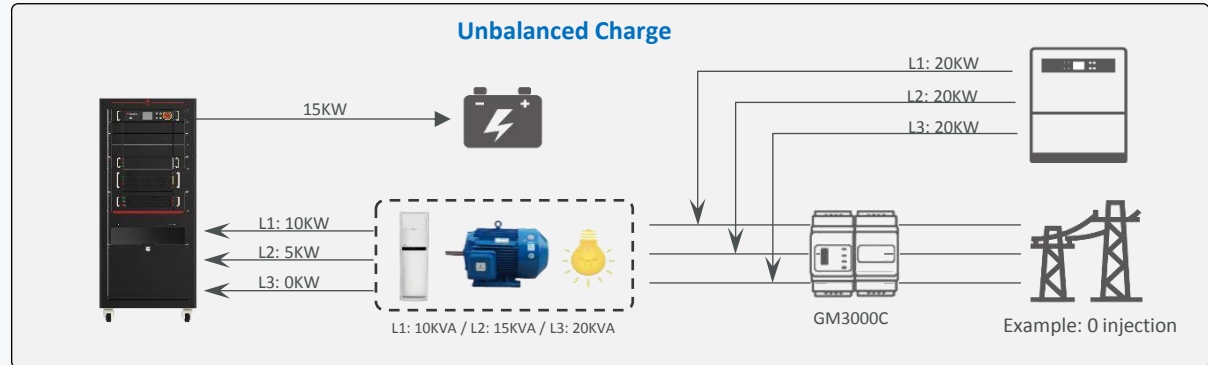
UPS- level mean the switch time is less than 10ms. But most of the brands in the market need around 5s or longer time, which is under EPS-level

100% Bidirectional Unbalanced 3-Phase Output

- 100% unbalanced output (phase-level ARC)
- Both STS & On-Grid Unbalance
- Optional on Display
- No extra devices required

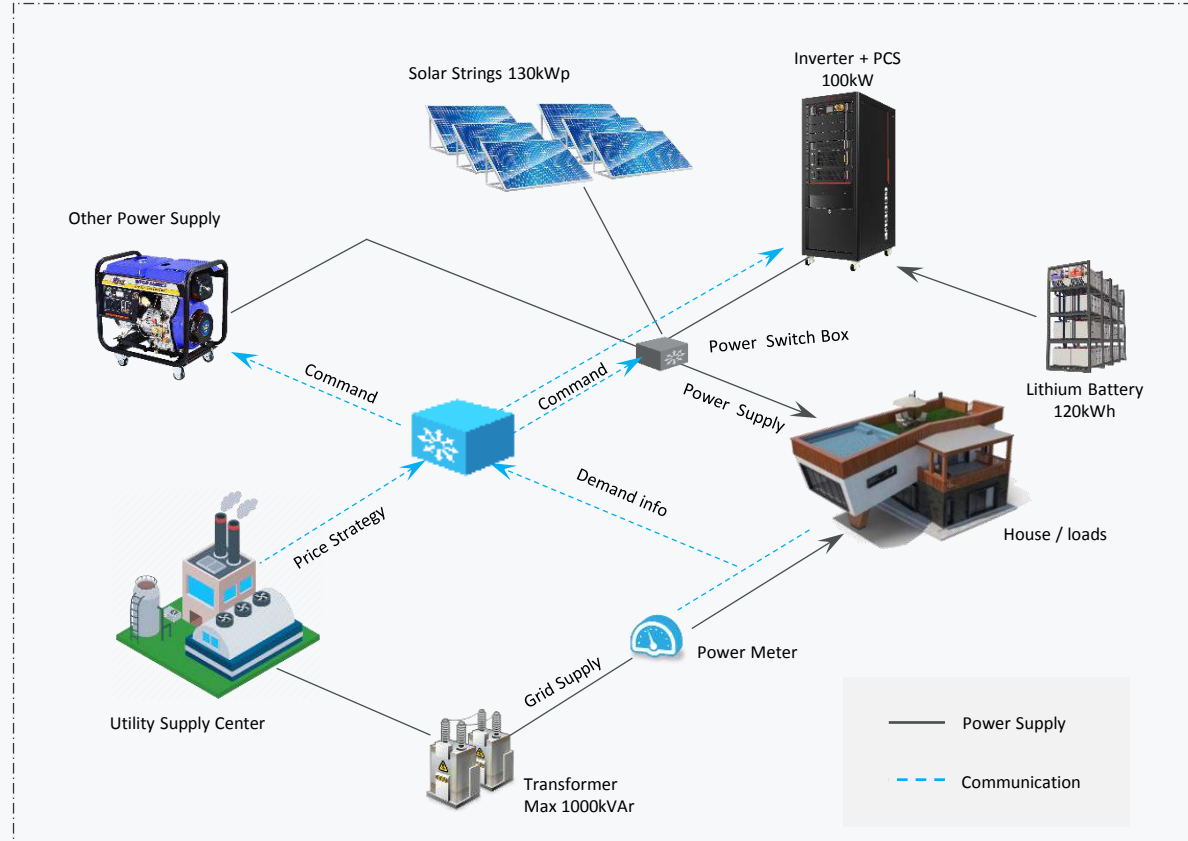


Note: unbalanced output on Grid side works only if Smart Meter works fine & communicates to inverter successfully



Smart Energy Control System

GoodWe has **open protocol** for management center in a VPP system to accept the real-time control of the system, where energy storage systems could be flexibly installed on rooftops or on ground.



THANK YOU FOR YOUR TIME

Copyright © GoodWe Power Supply Technology Co., Ltd. 2020. All rights reserved.