GOODWE Micro-grid Solution (North America Only)

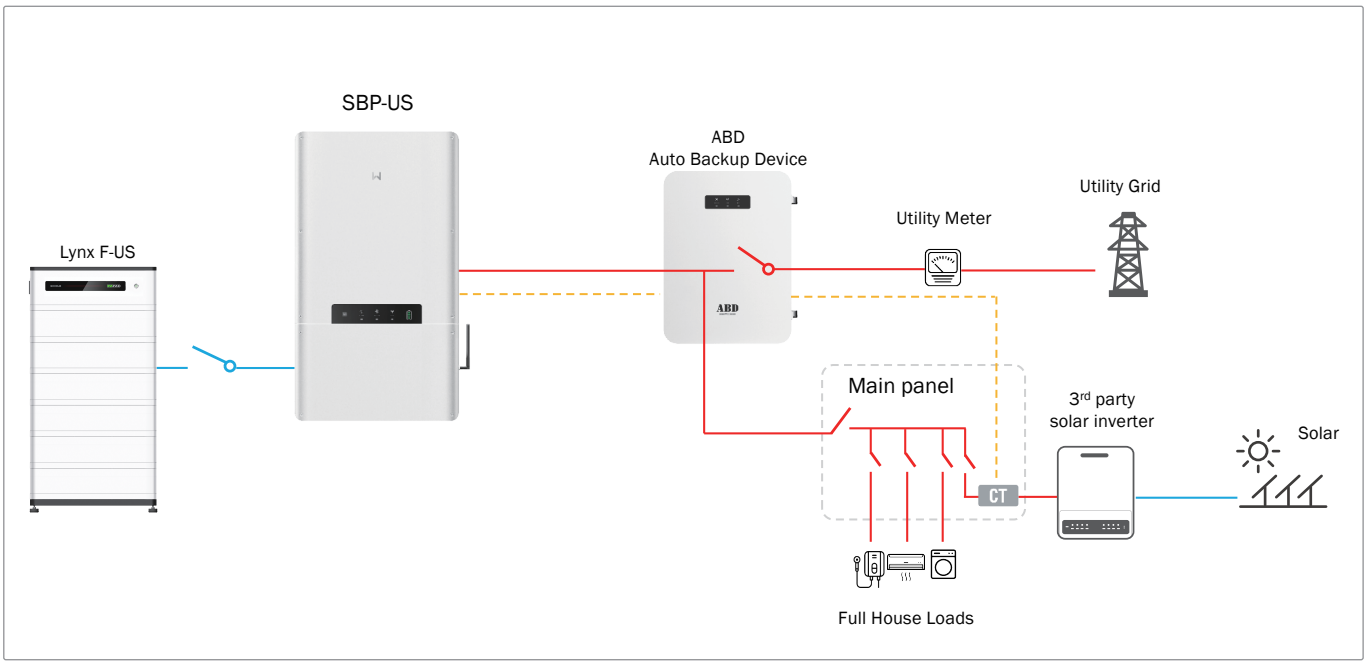
(SA-B-20220915-001)

GOODWE 2nd generation AC-coupled inverter SBP US is not only designed for whole home backup solution, it can also be used to form a micro-grid during outage in an AC-retrofit solution. It can be compatible with any existing solar inverter with a capacity less than 11.4 kW.

APPLICATION

As shown in following picture, the system backup function need a external Auto Backup Device (ABD) to realize. When there's a grid failure, ABD will disconnect with grid. Then inverter can turn from a grid-following mode to a grid-forming mode. Then the 3rd party solar inverter can keep working. This can prevent any energy loss during outage.

In this solution, a RGM with 4 CTs is ready. 2 more CTs are necessary to be added to monitoring the 3rd party solar inverter energy production. With this four CT meter solution, accurate load monitoring can be realized.



Besides supporting loads, the 3rd party solar inverter energy can also charge the battery. When the battery SOC is too high, SBP US will start frequency-shifting function. SBP US will increase the output frequency, causing the solar inverter to reduce the output power, until the battery enters a low-power discharge state.

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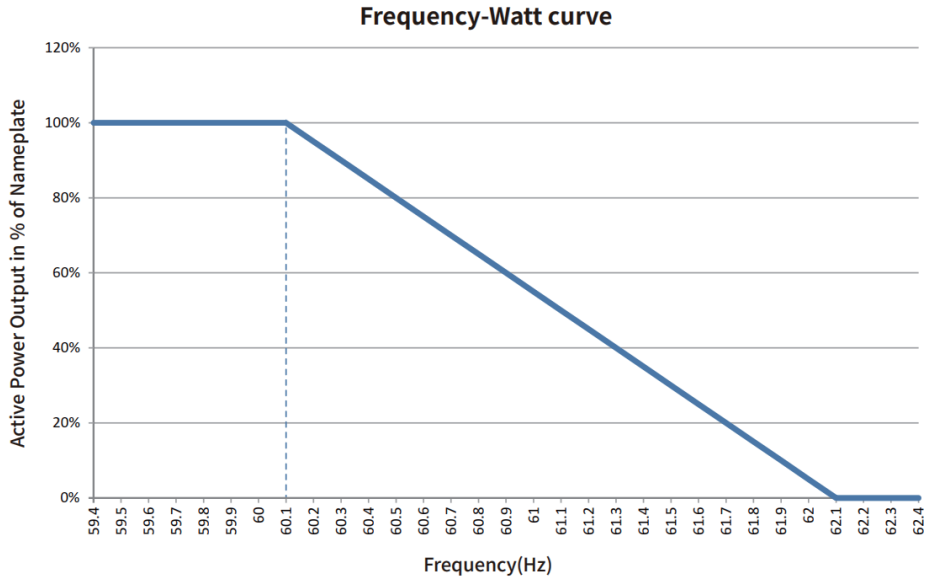
A micro-grid system configuration must meet the following rules.

1. A micro-grid system only supports one solar inverter.
2. If the solar panel and solar inverter have been installed, when you select the capacity of SBP US and battery, please satisfy the following constraint formula.

$$P_{SBP\ US} \geq P_{\_\ solar\ inverter}$$

$$\text{Min}\{\text{Min. } V_{BAT} * \text{Min}\{\text{Max. } I_{BAT\_Chg}, \text{Max.} I_{SBP\ US\_BatChg}\}, P_{SBP\ US}\} \geq \text{Min}\{P_{Panel}, P_{PVInverter}\}$$

3. The battery voltage in the micro-grid system must not be higher than 405V.
4. The solar inverter must respond to the following Frequency-Watt curve. (in following Figure)
5. When the frequency is shifted to over 60.5 Hz, solar inverter will shut down in 5 minutes.



Note:

$P_{SBP\ US}$: Rated Power of SBP US

$P_{\_\ solar\ inverter}$: Rated Power of the solar Inverter

P_{Panel} : Rated Power of the Panel

$\text{Min.}V_{BAT}$: Minimum Output Voltage of the Battery

$\text{Max.}I_{BAT\text{-}Chg}$: Maximum Charging Current of the Battery

$\text{Max.}I_{SBP\ US\_BatChg}$: Maximum Battery Charging Current of SBP US