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Swatten Dynamic Pricing Mode User Manual

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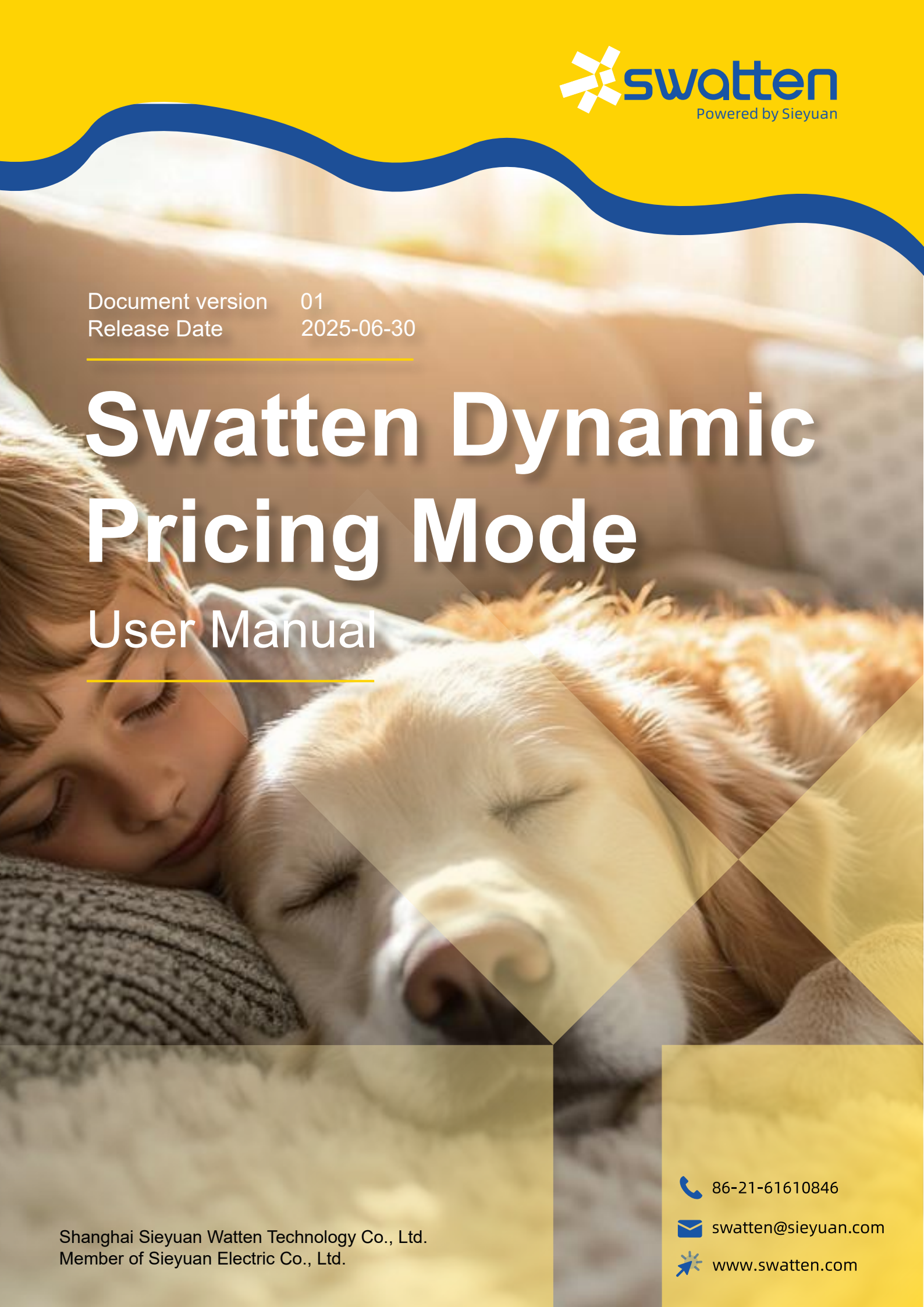

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1. Introduction to Dynamic Pricing Mode

Swatten's intelligent PV management system calculates the revenue of a power plant from the feed-in tariffs and purchase tariffs set by the user, combined with information on the purchase and sale of electricity by the user. At the same time, it is an energy management tool based on real-time tariff strategy, which integrates intelligent charging and discharging power control, intelligent power sale and purchase, intelligent AC output control, and regular self-consumption of electricity. Real-time monitoring of electricity price fluctuations and dynamic adjustment of equipment operation status. All-weather fully automatic operation without manual intervention. Help users optimize their electricity consumption behavior and reduce electricity costs.

The advantage of the dynamic tariff model is that it allows end-users to dynamically manage PV power and grid power to optimize energy use and profitability: During periods of high tariffs: prioritize PV power for household loads, minimizing reliance on expensive grid power. During peak feed-in tariffs: Maximize revenue by feeding more PV power into the grid. During periods of low feed-in tariffs: use grid power for household loads while storing PV power in batteries for later use. This intelligent scheduling reduces energy costs and improves financial returns

Feed-in tariff
The price at which electricity is sold by a power station feeding into the grid.

Purchased electricity tariffs
The price at which electricity is purchased from the grid. The price of electricity purchased currently supports time-of-day tariffs.

Electricity market
Swatten's intelligent PV management system interfaces with the European electricity market to obtain daily dynamic electricity prices as the tariff input for PV revenue calculation and power purchase costs; it also supports the configuration of correction items to adjust the tariff package price according to the user's actual contracted costs.

Tariff model-Fixed Price Mode
The Swatten Intelligent PV Management System has one operating modes to meet the needs of different customers.
Fixed Price Mode: For professional users who wish to fine-tune parameters to maximize profits.
This mode allows you to manually set specific charging and discharging price thresholds. The system automatically discharges (sell power) when the grid price exceeds your "sell" price,
and charges (buy power) when the grid price falls below your "buy" price.

⚠ The inverter that supports dynamic tariffs needs to be ARM21, DSP19 version or later, please check the software version of your device before use, if the software version is earlier than this version, please contact Swatten for upgrading.

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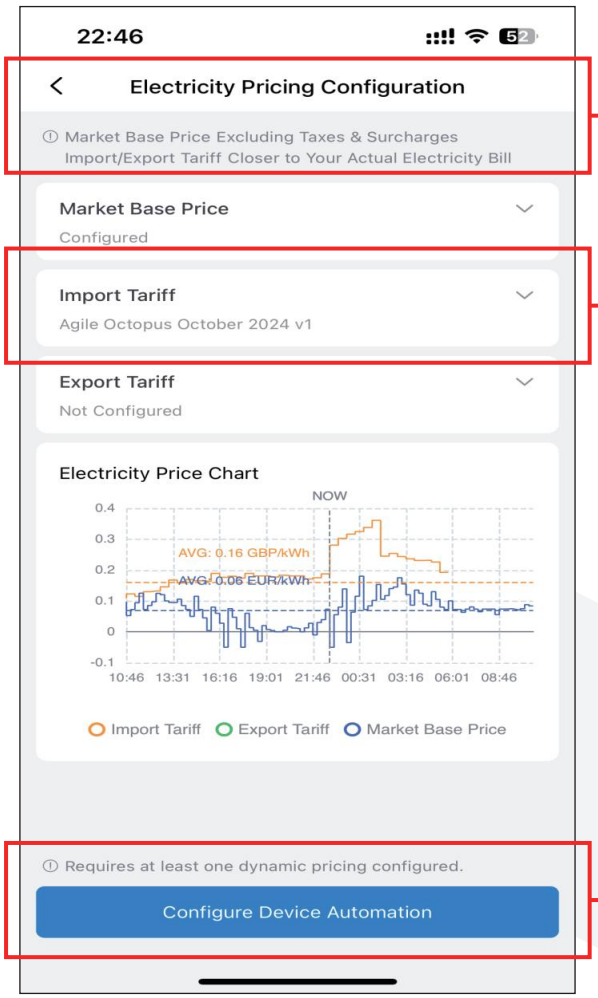
2. Configure tariffs via the Solarman Smart App

2.1. Inverter control functions based on dynamic tariffs

2.1.1. Dynamic Tariff Configuration Steps

1. Configuration of electricity tariffs: linking the price plans of actual electricity retailers to the platform.



Step 1
Not Integrated?
Select to use market benchmark prices.

Step 2
Retailer Integrated?
Select for automatic, real-time prices.

Step 3
Enable Automation

2. Enable automation: with a single click of activation,
the system takes over and begins to intelligently manage your energy.

3. Setting automation parameters:
Define your dynamic tariff operation strategy: tell the system how to work for you.
Define price thresholds: First, tell the system what you consider to be "high" and "low" electricity prices.
For example: any price above €0.99/kWh is considered high. Any price below 0€/kWh is considered low.

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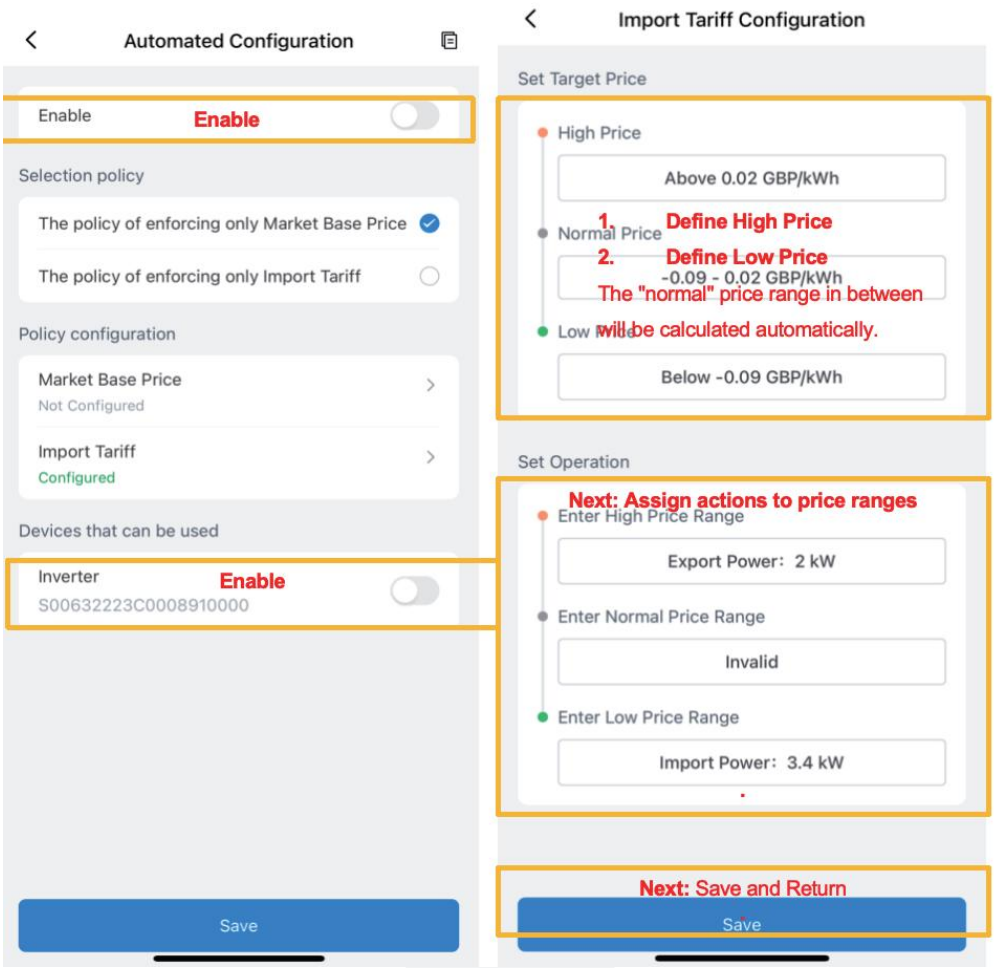

4. Smart Actions: Maximize Value at the Perfect Moment

- Assign Automated Tasks:
  Tell your system exactly what to do based on the live price of electricity.

- Popular Money-Saving Strategy:
  When Prices Are High: The system automatically powers your home with cheap energy from your battery or sells the excess power to the grid for a profit.
  When Prices Are Low: The system intelligently charges your battery from the grid, building up your energy reserve at the lowest possible cost.
  At All Other Times: The system can simply run in its default mode, with no special actions required.

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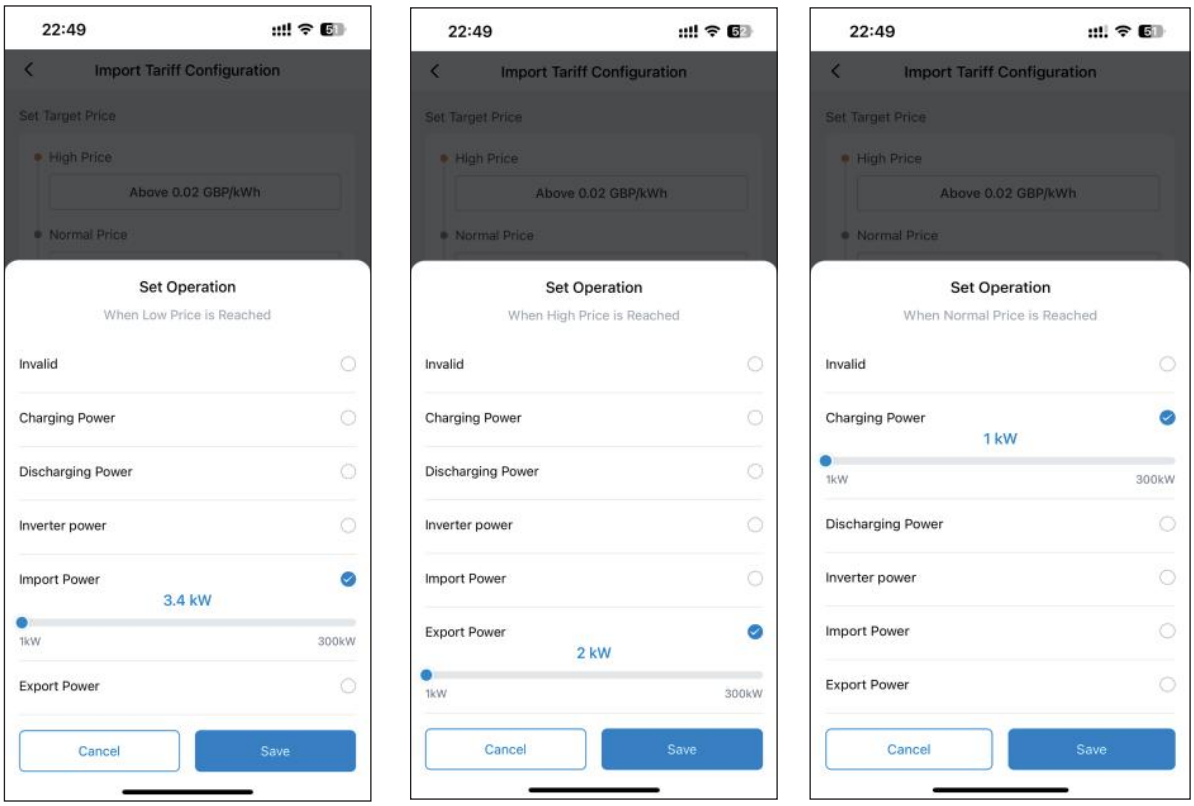

⚠ When the operating mode of the inverter is selected as invalid, it means that there is no dynamic tariff control, and then the inverter will work in self-generation and self-consumption mode.

5. Complete all configurations:

Flip the Main Switches:
Once your strategy is configured, simply go back to the home screen and enable the master switches for both your device and the automation system.

System Takes Over:
The platform will now run on its own, sending instructions to your equipment and intelligently managing your energy according to your rules.

Full Transparency and Control:
Want to see what the system is doing? Check the [Log] at any time to review every command s ent and its status. You have complete visibility

⚠ For Integrated Retailers: If your local electricity supplier is connected, use this option to automatically get real-time price updates directly from their platform. For other suppliers: If your supplier is not connected, click here to use the general market benchmark price for your country. Once connected, the chart will provide an overview of electricity prices for the next 24 hours.

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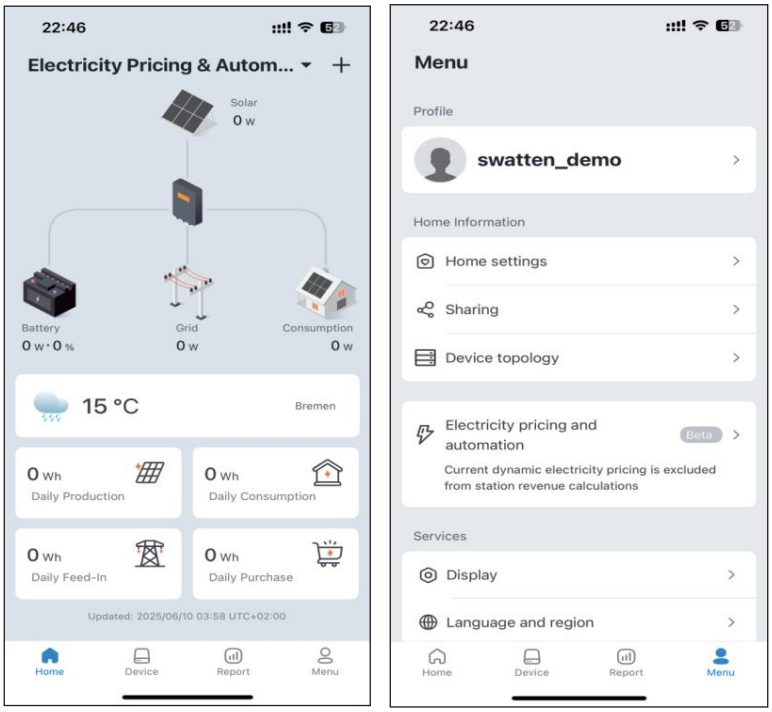
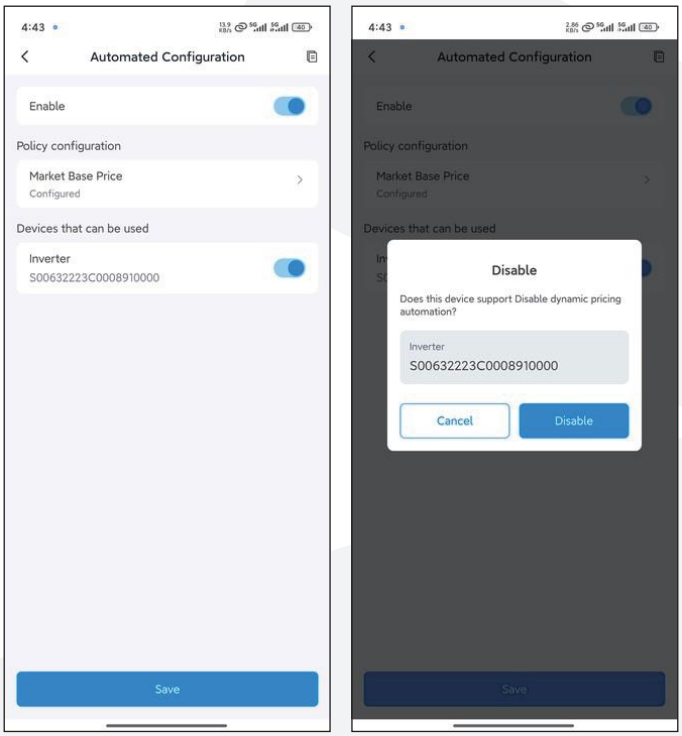
2.1.2. Activating and deactivating the dynamic tariff function

1. Please find the entry "Tariffs and Automation" on the "Menu" page of the APP.
   (If this feature is not visible, it means that there are currently no inverters eligible for use in your country or at an existing power station.)



2. Remove the inverters that have been checked, means disable the dynamic tariff function



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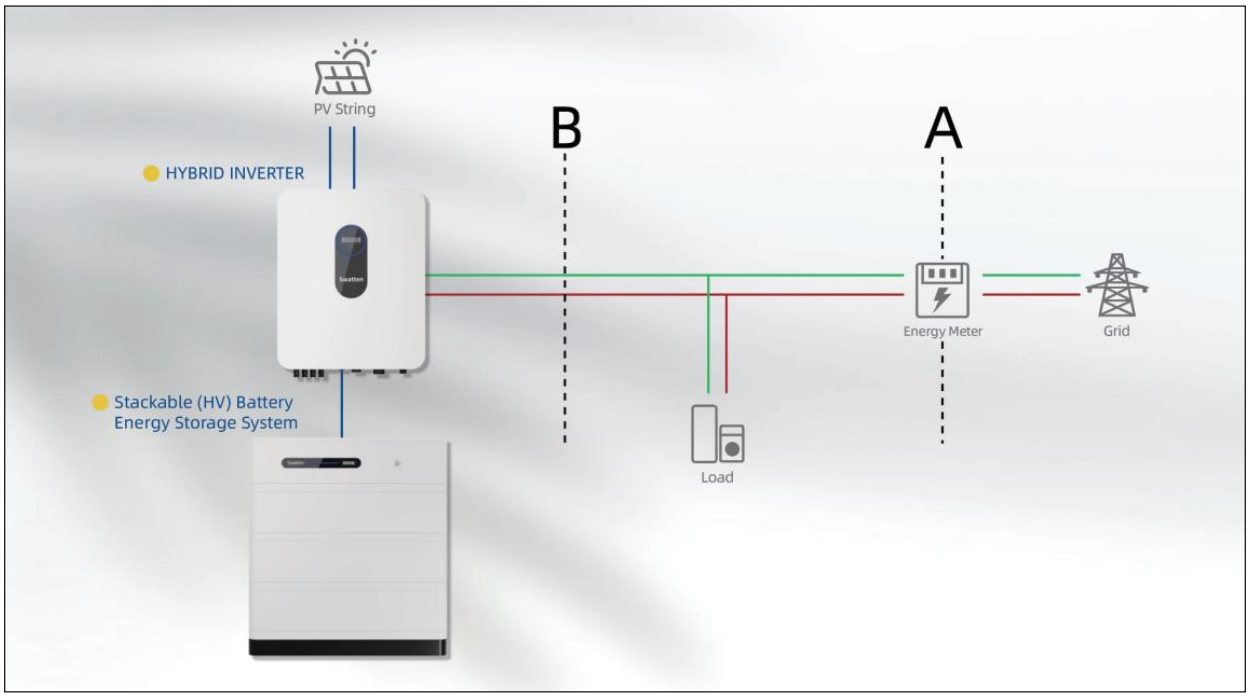
2.2 Explanation of Swatten Dynamic Pricing Mode Control Logic

Swatten's hybrid inverter can dynamically adjust its working mode based on the electricity price, utilizing the smart meter at Point A and its built-in EMS system. This adjustment operates within the customer-defined electricity price range.



Illustrative Model:
A household has a 10kW inverter with a maximum home load of 8kW.
Dynamic Price Mode Settings:
When electricity price > 1 EUR/kWh: Sell electricity to the grid at 8kW.
When electricity price < 0 (negative price): Draw electricity from the grid at 10kW.
Otherwise: Operate in self-consumption mode.

Scenario 1: Price = 1.2 EUR/kWh
The inverter executes the command to output 8kW to the grid at Point A.
If the load is 1kW: The inverter's total output power at Point B is 9kW (selling power + load consumption).
If the load is 8kW: The inverter outputs at its maximum capacity of 10kW. The actual selling power at Point A is 2kW (10kW total output - 8kW load).

Scenario 2: Price = -0.1 EUR/kWh
The inverter executes the command to draw 10kW from the grid at Point A.
If the load is 5kW: The inverter allocates the remaining 5kW to charge the batteries.
If the load is 8kW: The inverter charges the batteries at 2kW.
(Charging power = Grid draw power - Load consumption)

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Control at Point A (Not Point B): Rationale

We control at Point A (grid connection point) rather than Point B (inverter output) for the following key reasons:

1.Centralized Household Energy Management:

Controlling at Point A treats the household's entire energy ecosystem (all loads and generation devices) as a unified system managed through the smart meter. The meter acts as the home's energy gateway, making its import/export the consistent interface with the grid.

2.Ensuring Grid Draw Intent:

If control were based on Point B and the home had a PV inverter, the household load could appear negative.

For example:

Suppose the dynamic price task requires 5kW charging at Point B.
If the PV inverter is generating 6kW, this would result in 1kW being exported to the grid at Point A (meter), failing the objective of drawing power from the grid.

Furthermore, PV inverter power fluctuations would cause unpredictable grid import/export values at Point A. By controlling at Point A, we guarantee a constant, intended power draw/sell at the grid gateway, regardless of PV generation fluctuations.

Supporting High-Power Applications: For homes with large loads requiring significant grid power during low/negative price periods, a high grid draw power can be set. For example, in Scenario 2, one could set the grid draw power to -18 kW during low prices. (The current maximum supported setting is ±32 kW, and this limit can be increased to 50kW). (Note: The negative sign here conventionally indicates grid import/draw.

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