

# EMS Function Introduction

V1.0.1

PREPARED FOR VOLTHA ENERGY PROJECTS



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# 1 Technical Parameters of ES Series

## 1.1 Product Description

The ES series energy controller is an embedded energy controller developed by Shenzhen MEGAREVO Technology Co., Ltd. The controller collects data and signals from local equipment and ensures the safe, reliable, and economic operation of the energy storage system through internal logic. Adopting the Internet of Things architecture based on edge computing, the controller can download decision-making models through the background or cloud system to achieve intelligent operation of the energy storage system. This controller has various control modes such as peak-valley arbitrage, demand control, and photovoltaic-storage complementarity.



Figure 1.1 ES-01

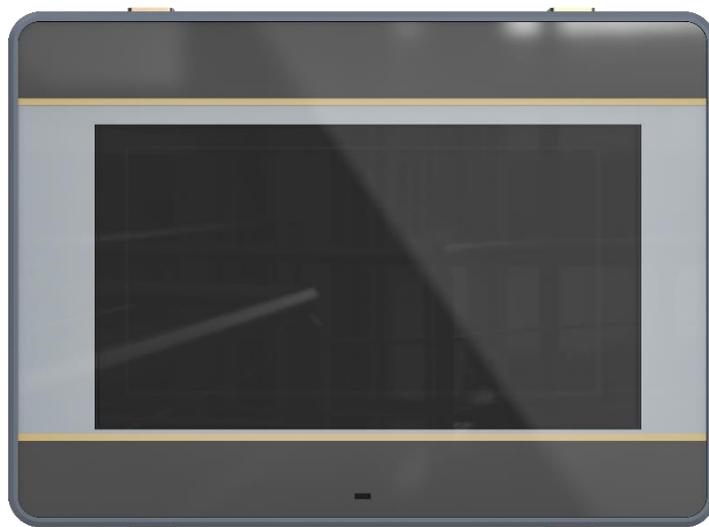


Figure 1.2 ES-03

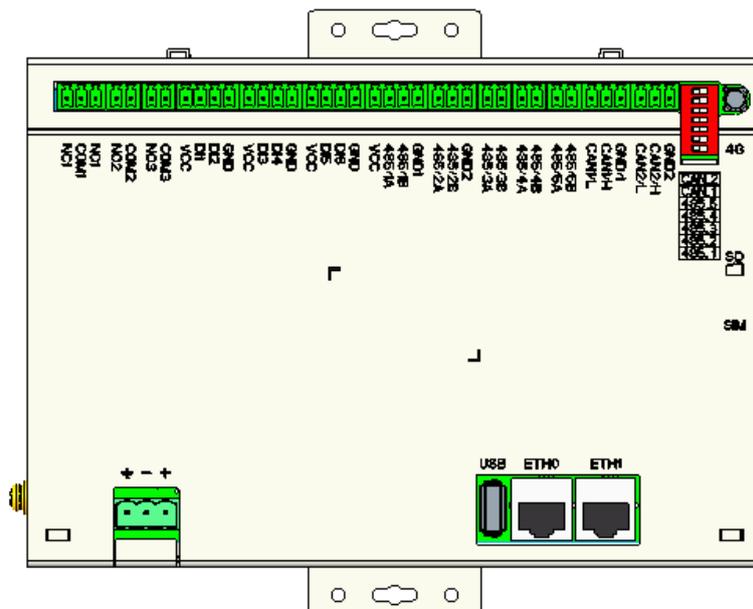


Figure 1.3 ES-02

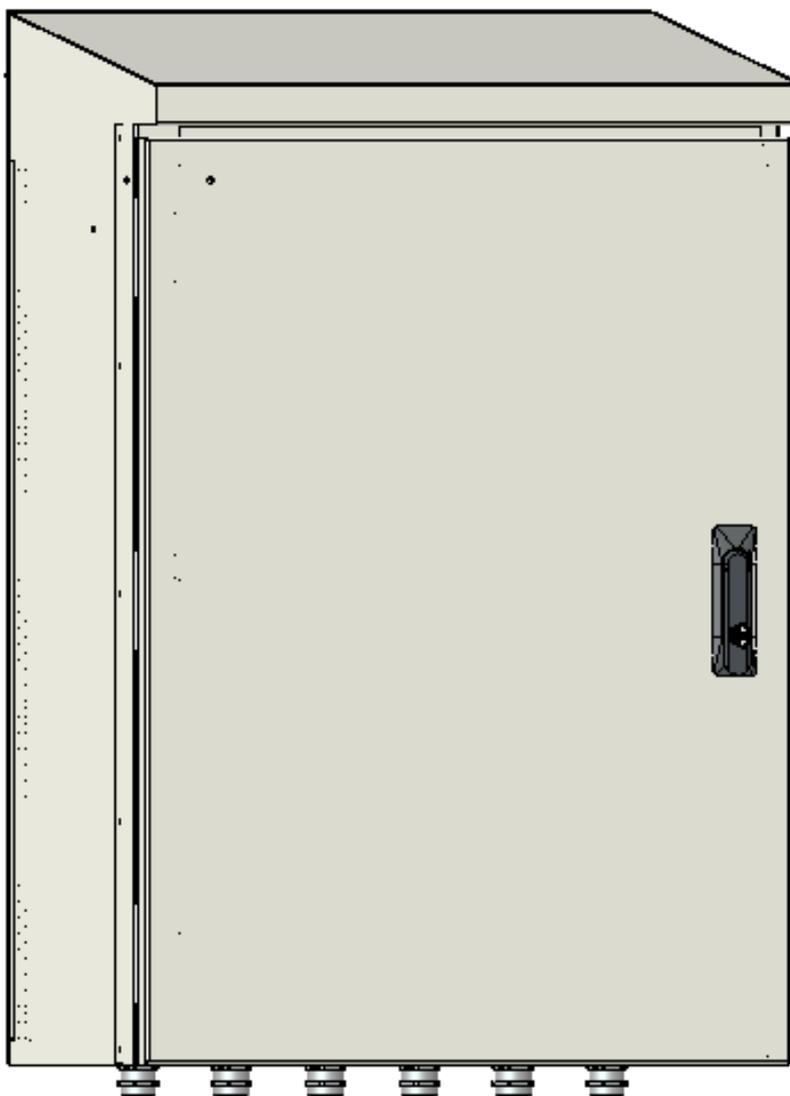


Figure 1.4 ES-04

### 1.1.1 Technical Parameters of ES-01 to ES-03

- 1) Input Power: 1-channel DC9~36V
- 2) Power Consumption: <15W
- 3) CPU: Single-core 800MHz, ARM architecture, 32-bit, NXP
- 4) Operating System: Embedded Linux
- 5) Storage Capacity: < 64GB
- 6) Measurement Accuracy: Voltage <0.1%; Current <0.5%; Temperature <0.5°C; Time Resolution <0.1s
- 7) Monitored PCS Quantity: < 10
- 8) Ethernet 100M: 2 independent network ports
- 9) Operating System (OS): Linux
- 10) Communication Protocols: CAN, MODBUS, MQTT
- 11) Time Synchronization: NTP
- 12) Communication Interfaces: 5 RS485, 2 CAN
- 13) I/O Ports: 3DO, 6DI
- 14) Number of Connected Air Conditioners: < 10
- 15) Number of Connected Electricity Meters: < 8
- 16) Number of Connected Photovoltaic (PV) Inverters: < 10
- 17) USB Ports: 1
- 18) 4G Interface: 1

### 1.1.2 Technical Parameters of ES-04

- 1) Input Power: 1-channel AC220V (standard), 1-channel AC220V + 1-channel DC400~850V (optional)
- 2) Power Consumption: < 20W
- 3) CPU: Single-core 800MHz, ARM architecture, 32-bit, NXP
- 4) Operating System: Embedded Linux
- 5) Storage Capacity: < 64GB
- 6) Measurement Accuracy: Voltage <0.1%; Current <0.5%; Temperature <0.5°C; Time Resolution <0.1s
- 7) Monitored PCS Quantity: < 10
- 8) Ethernet 100M: 2 independent network ports
- 9) Operating System (OS): Linux
- 10) Communication Protocols: CAN, MODBUS, MQTT
- 11) Time Synchronization: NTP
- 12) Communication Interfaces: 7 RS485, 2 CAN
- 13) I/O Ports: 11DO, 14DI
- 14) Number of Connected Air Conditioners: < 10
- 15) Number of Connected Electricity Meters: < 8
- 16) Number of Connected Photovoltaic (PV) Inverters: < 10
- 17) USB Ports: 1
- 18) 4G Interface: 1

## 1.2 Installation and Wiring

### 1.2.1 Environmental Requirements

- 1) Standard operating temperature:  $-10^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$
- 2) Extreme operating temperature:  $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$
- 3) Storage temperature:  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
- 4) Operating humidity: 5% to 95% RH, no condensation or icing

### 1.2.2 Model Specifications

Model Specifications: ES-xx	
ES-01	10.1-inch display screen
ES-02	SCADA functionality without display screen
ES-03	7-inch display screen
ES-04	Built-in ES-01/ES-02, configured according to the project site

## 1.3 System Functions

Function		Description
Monitoring	SCADA	Data display of equipment, including topology diagrams, status, alert information, etc.
	PCS	Analog, status, real-time data, and alert information of PCS.
	BMS	Analog, status, information, alerts, SOC, SOH, and other data of batteries.
	Air Conditioning	Analog, status, information, and alerts of air conditioning systems.
	Other Equipment	Display of information from fire-fighting equipment, environmental monitoring equipment, etc.
Alert	Operational Alert	Alerts such as PCS alarms, air conditioning alarms, battery alarms, etc.
	Communication Alert	Communication anomaly alerts.
Scheduling	Multiple Scheduling Strategies	Operations such as peak shaving, steady-state expansion, and transient expansion.
Log	PCS Logs	Recording of alarms generated during PCS commissioning.
	BMS Logs	Recording of alarms generated during BMS commissioning.
	Air Conditioning Logs	Recording of alarms generated during air conditioning commissioning.
	Air Conditioning Logs	Recording of remote/local scheduling commands.
Statistics	Charging Statistics	Charging curves for today, this month, and this year.
	Discharging Statistics	Discharging curves for today, this month, and this year.
	Power Generation Statistics	Power generation curves for today, this month, and this year.
	Power Purchase Statistics	Electricity purchase curves for today, this month, and this year.
	Power Sale Statistics	Electricity sale curves for today, this month, and this year.
Maintenance	Remote Upgrade	Remote upgrade of PCS, remote upgrade of BMS (customizable according to customer requirements).
	Remote Debugging	Remote debugging of on-site equipment.
	Remote Parameter Modification	Remote modification of device setup parameters.

### 1.3.1 SCADA Equipment Monitoring

Data display of key equipment throughout the system, including topology diagrams, status, alert information, etc.

As shown in Figure 1.5 of the System Monitoring page.

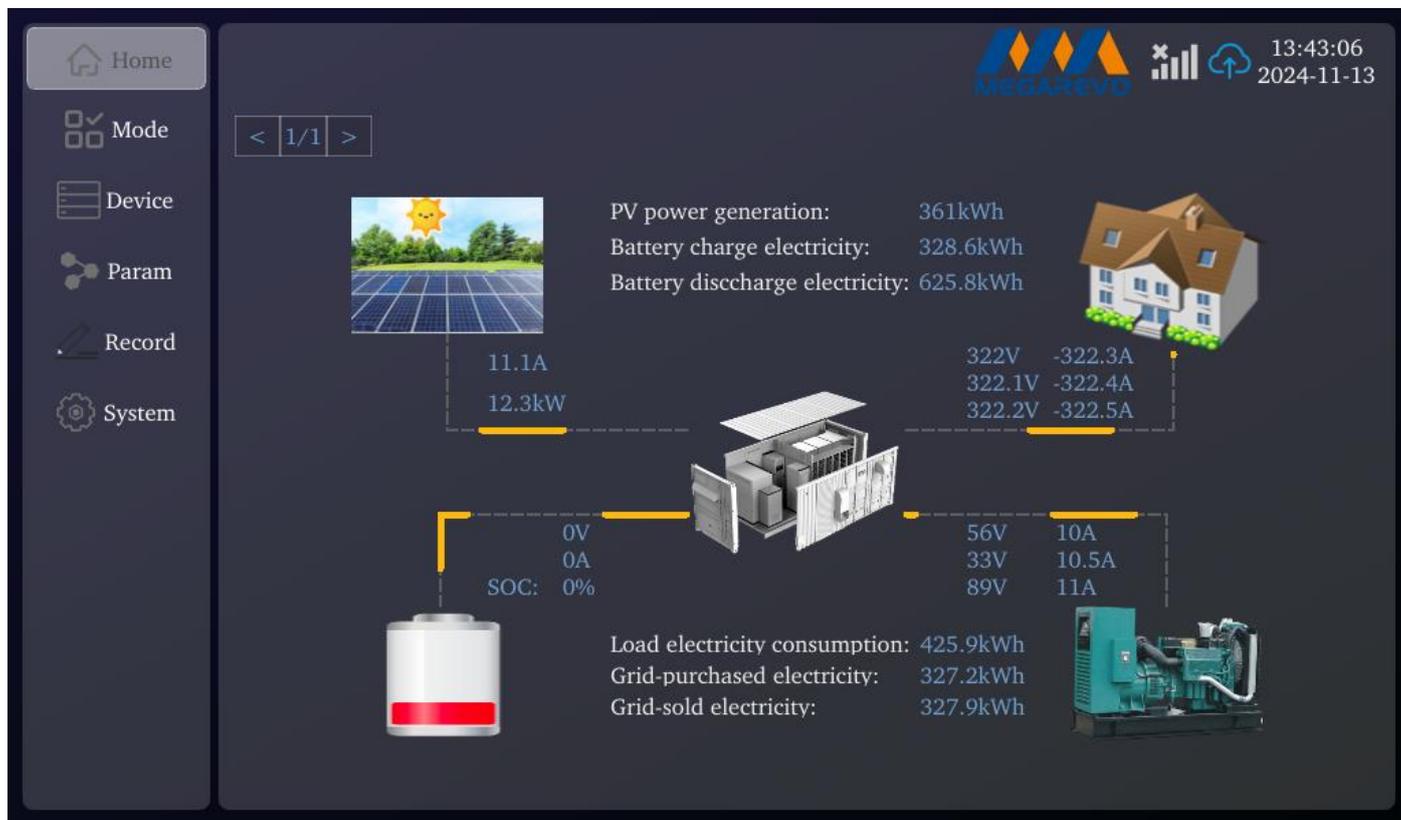
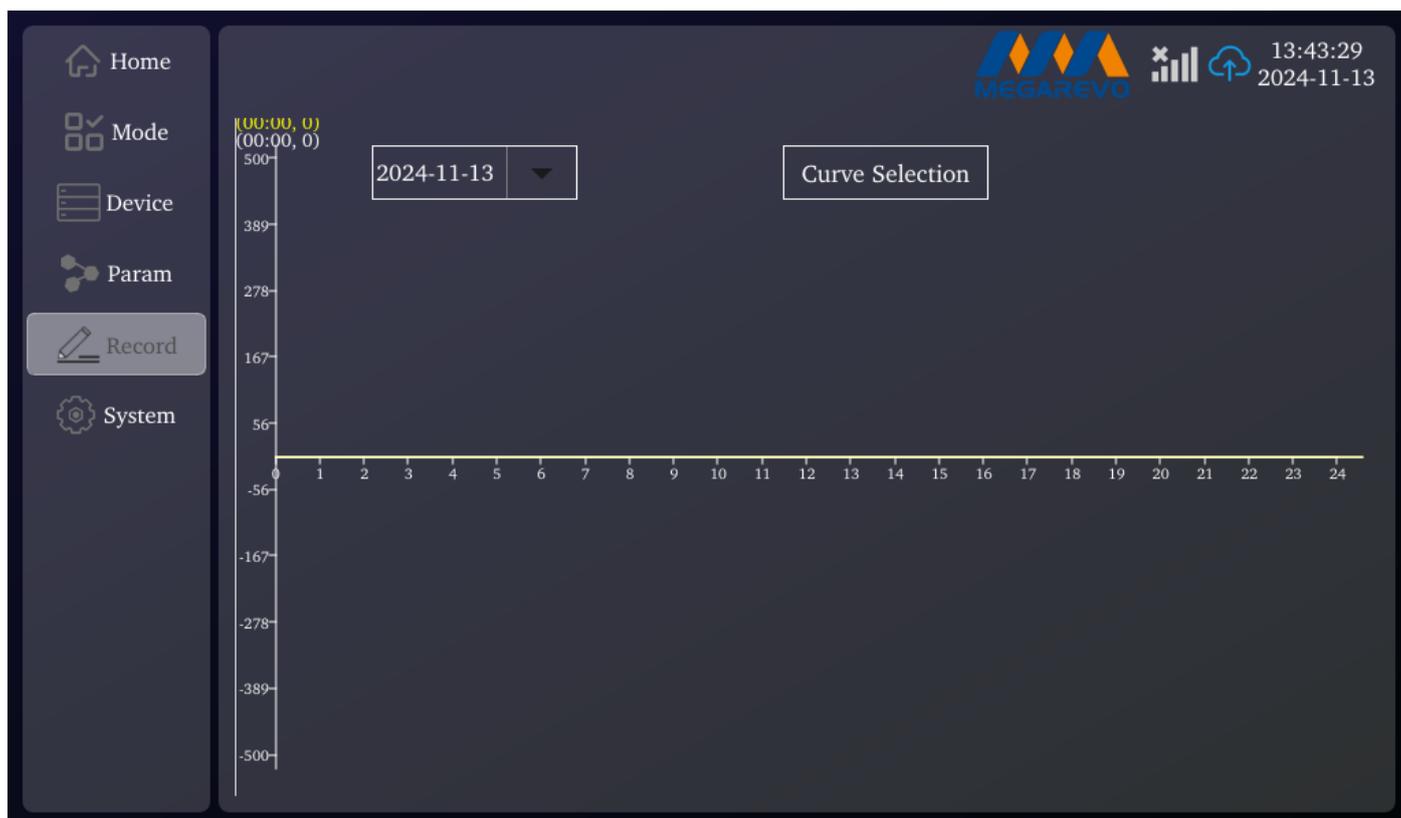


Figure 1.5 System Monitoring Page

### 1.3.2 SCADA Device Details



### 1.3.3 EMS Energy Control

Through this interface, you can set the control mode of the energy storage system, including scheduling methods, time-of-day control methods, and various other types.



Table 1.1 Control Mode Table

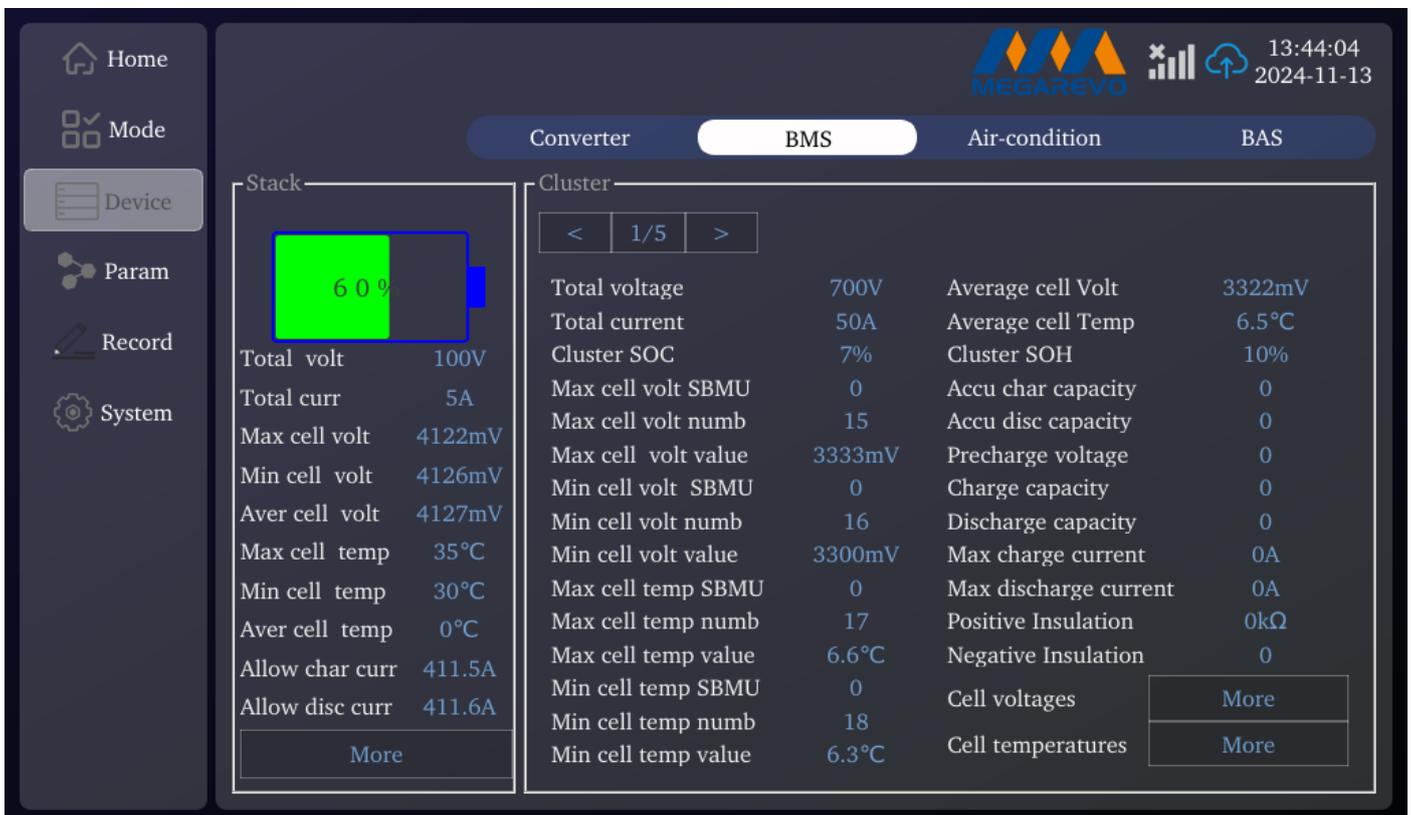
Peak-valley mode	The system will schedule the charging and discharging of energy based on the electricity price curve (operation time periods can be manually set or data can be acquired through the API interface of the local power grid).
Steady-state expansion	The energy storage system adjusts charging and discharging power and energy storage to solve the problem of insufficient transformer capacity.
Transient expansion	The energy storage system adjusts charging and discharging power and energy storage rapidly (on the millisecond level) to help solve the problem of insufficient line capacity.
Backup power mode	In grid-connected mode, the battery is maintained in a fully charged state. When power is lost, the energy storage system supplies power to the load to prevent important loads from being disconnected.
Hybrid mode	According to customer needs, set the operation strategy of the photovoltaic and energy storage integrated system to achieve optimal results.

### 1.3.4 BMS Battery System

Battery stack, a battery stack is composed of one or more battery clusters. Corresponding system page:



#### 1) Battery cluster data



2) Temperature information of all cells in the battery cluster

The screenshot displays a battery management interface. A modal window is open, showing the following temperature data for 37 cells:

Cell temp 1	30°C	Cell temp 29	0°C
Cell temp 2	30°C	Cell temp 30	0°C
Cell temp 3	30°C	Cell temp 31	0°C
Cell temp 4	30°C	Cell temp 32	0°C
Cell temp 5	0°C	Cell temp 33	0°C
Cell temp 6	0°C	Cell temp 34	0°C
Cell temp 7	0°C	Cell temp 35	0°C
Cell temp 8	0°C	Cell temp 36	0°C
Cell temp 9	0°C	Cell temp 37	30°C

The background interface shows various battery parameters:

- Stack-: [Redacted]
- Total [Redacted]
- Total c [Redacted]
- Max ce [Redacted]
- Min ce [Redacted]
- Aver ce [Redacted]
- Max ce [Redacted]
- Min ce [Redacted]
- Aver ce [Redacted]
- Allow char curr: 411.5A
- Allow disc curr: 411.6A
- More
- Max cell temp value: 6.6°C
- Min cell temp SBMU: 0
- Min cell temp numb: 18
- Min cell temp value: 6.3°C
- Negative Insulation: 0
- Cell voltages: More
- Cell temperatures: More
- Volt: 3322mV
- Temp: 6.5°C
- 10%
- capacity: 0
- capacity: 0
- voltage: 0
- capacity: 0
- capacity: 0
- current: 0A
- age current: 0A
- lulation: 0kΩ

3) Voltage of all battery cells

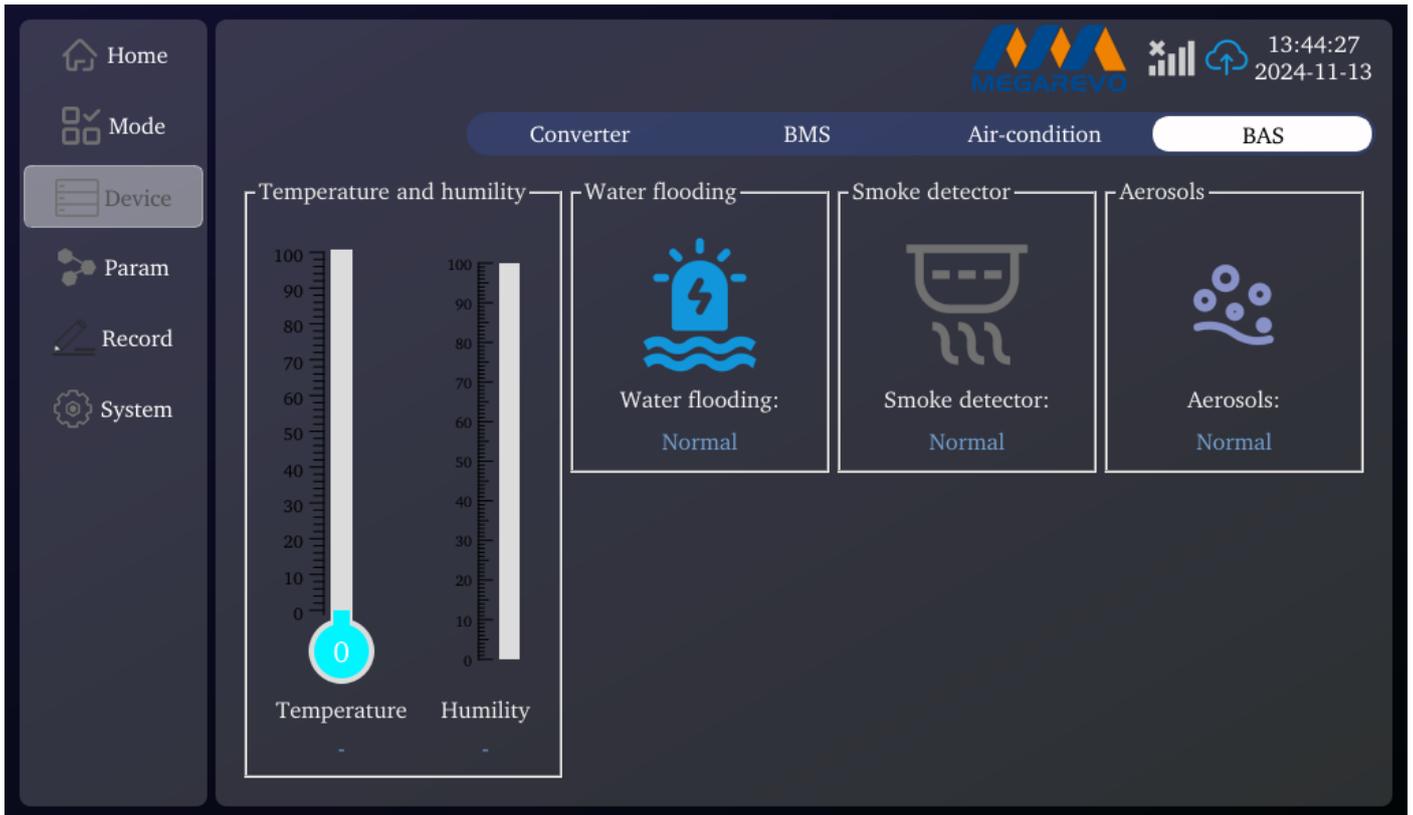
The screenshot displays a battery management interface. A modal window is open, showing the following voltage data for 121 cells:

Cell voltage 1	3000mV	Cell voltage 113	0mV
Cell voltage 2	3000mV	Cell voltage 114	0mV
Cell voltage 3	3000mV	Cell voltage 115	0mV
Cell voltage 4	3000mV	Cell voltage 116	0mV
Cell voltage 5	3000mV	Cell voltage 117	0mV
Cell voltage 6	3000mV	Cell voltage 118	0mV
Cell voltage 7	3000mV	Cell voltage 119	0mV
Cell voltage 8	0mV	Cell voltage 120	0mV
Cell voltage 9	0mV	Cell voltage 121	0mV

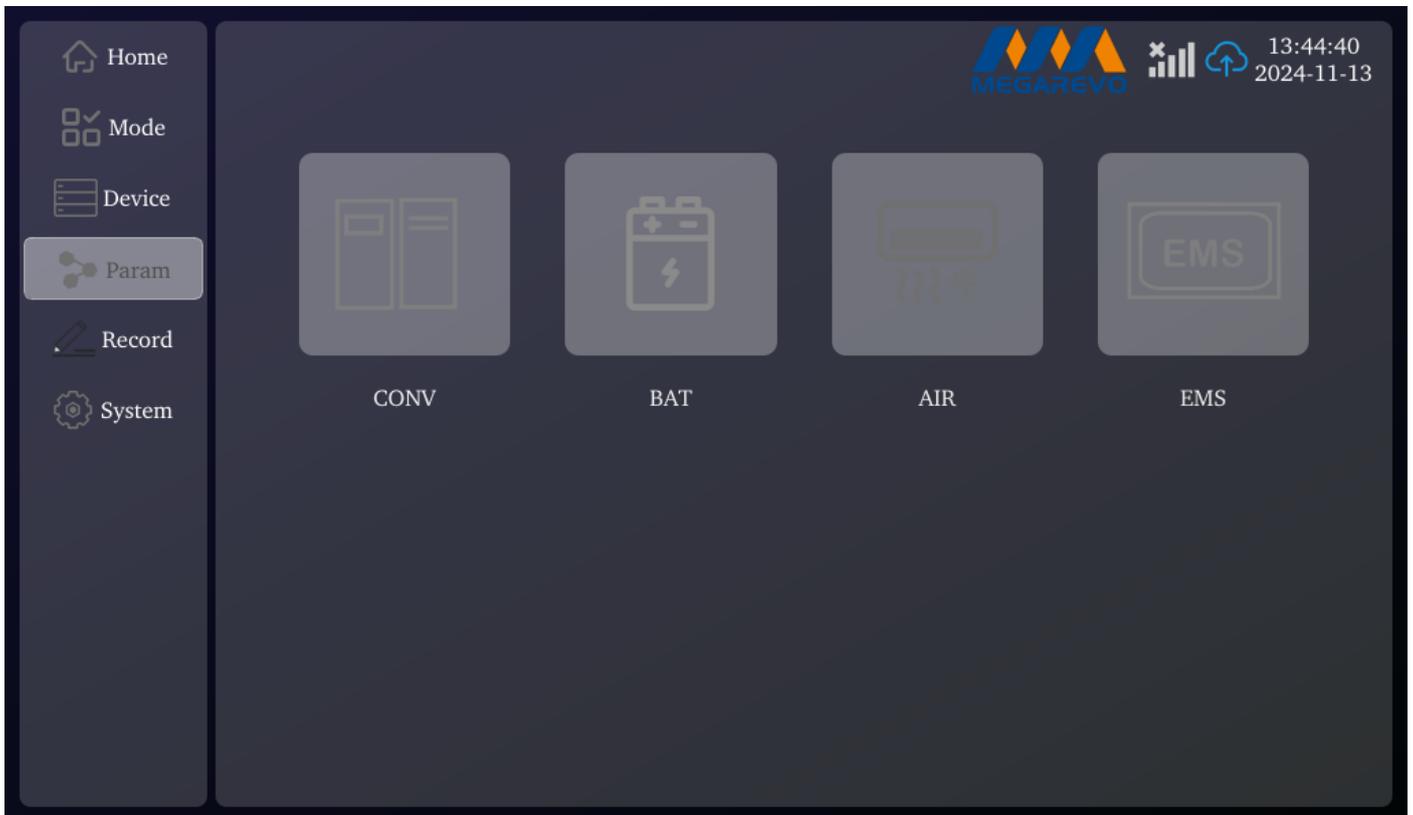
The background interface shows various battery parameters:

- Stack-: [Redacted]
- Total [Redacted]
- Total c [Redacted]
- Max ce [Redacted]
- Min ce [Redacted]
- Aver ce [Redacted]
- Max ce [Redacted]
- Min ce [Redacted]
- Aver ce [Redacted]
- Allow char curr: 411.5A
- Allow disc curr: 411.6A
- More
- Max cell temp value: 6.6°C
- Min cell temp SBMU: 0
- Min cell temp numb: 18
- Min cell temp value: 6.3°C
- Negative Insulation: 0
- Cell voltages: More
- Cell temperatures: More
- Volt: 3322mV
- Temp: 6.5°C
- 10%
- capacity: 0
- capacity: 0
- voltage: 0
- capacity: 0
- capacity: 0
- current: 0A
- age current: 0A
- lulation: 0kΩ

### 1.3.5 Dynamic Environment System



### 1.3.6 System Configuration



### 1.3.7 Alarms and Logs

You can enter through the menu.



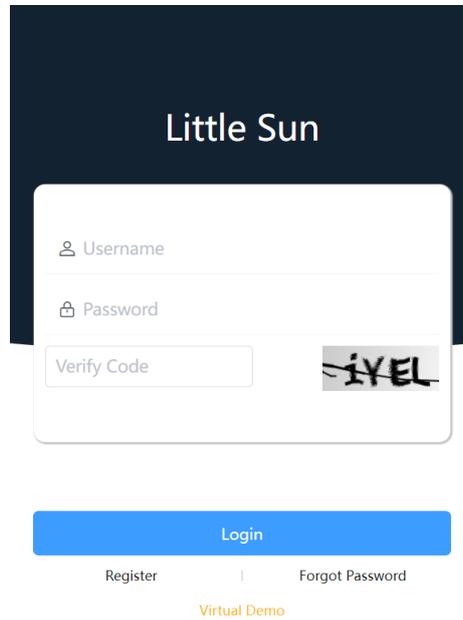
The screenshot shows the MEGAREVO mobile application interface. On the left is a dark sidebar menu with icons and labels for 'Home', 'Mode', 'Device', 'Param', 'Record' (highlighted), and 'System'. The top right of the main screen features the MEGAREVO logo, signal strength and Wi-Fi icons, and the time '13:44:56' and date '2024-11-13'. The main content area displays a table with the following data:

	ModificationTime	RecordEvent
1	2024-04-01 06:29:03	workMode: Battery priority -> Optimal mode
2	2024-04-01 06:29:01	workMode: Manual mode -> Battery priority
3	2024-04-01 06:29:00	workMode: -> Manual mode
4	2024-04-01 06:28:30	controlMode: -> EMS remote

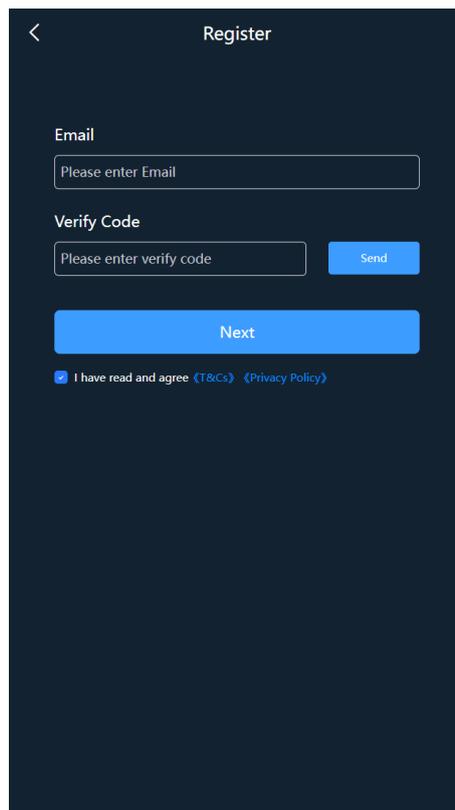
## 2 APP Function

### 2.1 Login Function

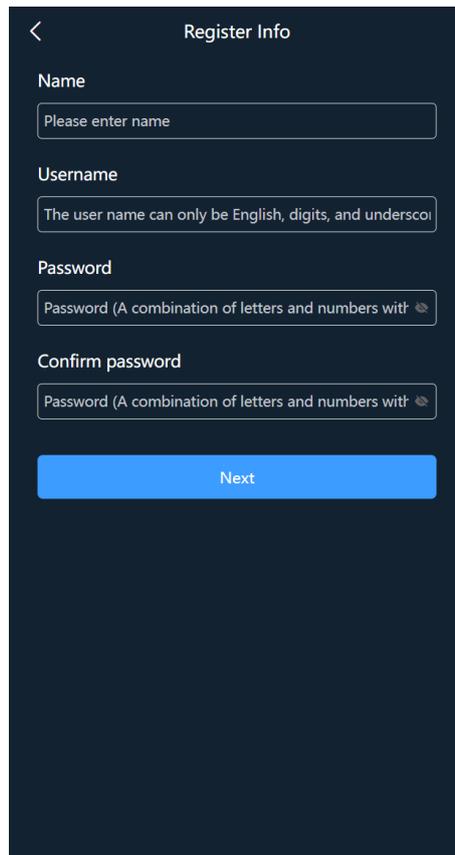
1) Users can log in using email + password or username + password.



2) Users without accounts need to register first. Click the registration button at the bottom left to register.  
a. Enter your email to get a verification code, and click next after successful verification.

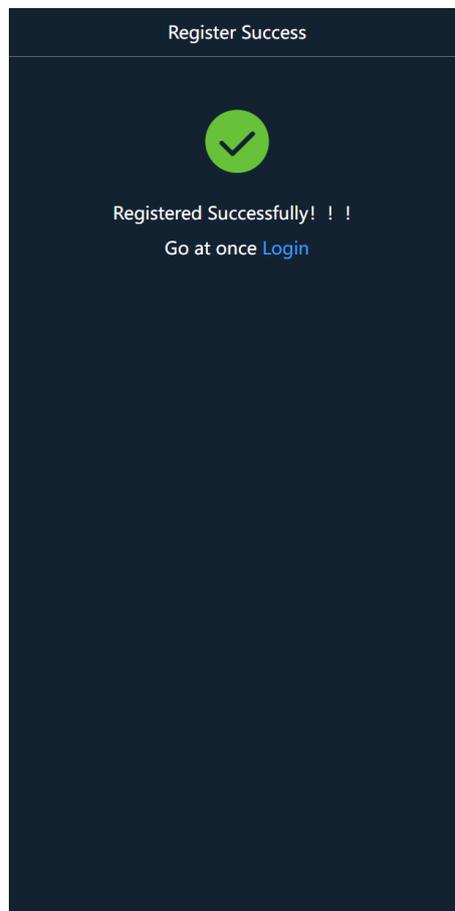


b. Fill in the registration information.



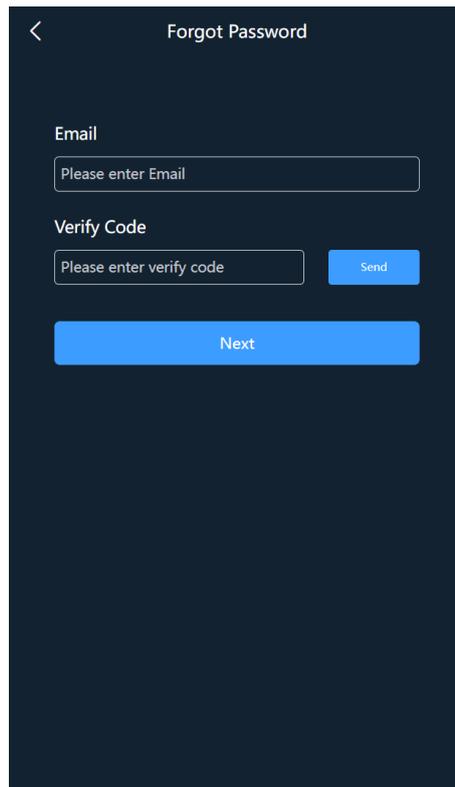
The screenshot shows a mobile application interface for registration. At the top, there is a back arrow and the title "Register Info". Below the title, there are four input fields with labels: "Name" (placeholder: "Please enter name"), "Username" (placeholder: "The user name can only be English, digits, and underscore"), "Password" (placeholder: "Password (A combination of letters and numbers with...)", and "Confirm password" (placeholder: "Password (A combination of letters and numbers with..."). At the bottom of the form is a blue button labeled "Next".

c. Registration successful.



3) Forget password

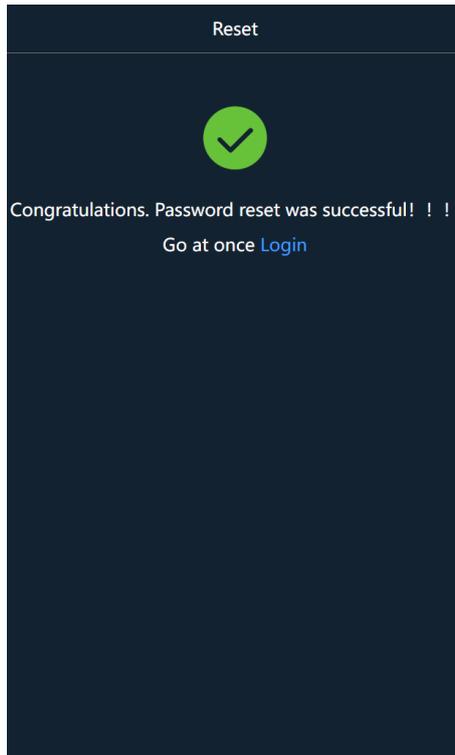
- a. Click "forget password" and enter the email for verification.



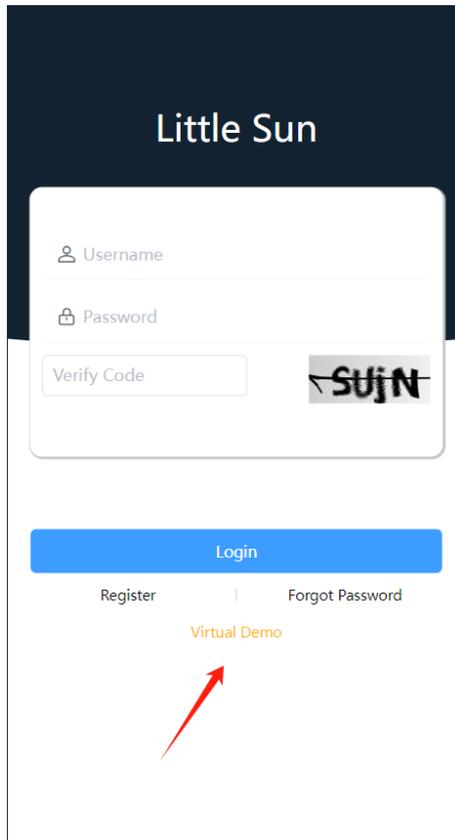
- b. After successful verification, enter a new password and confirm it.



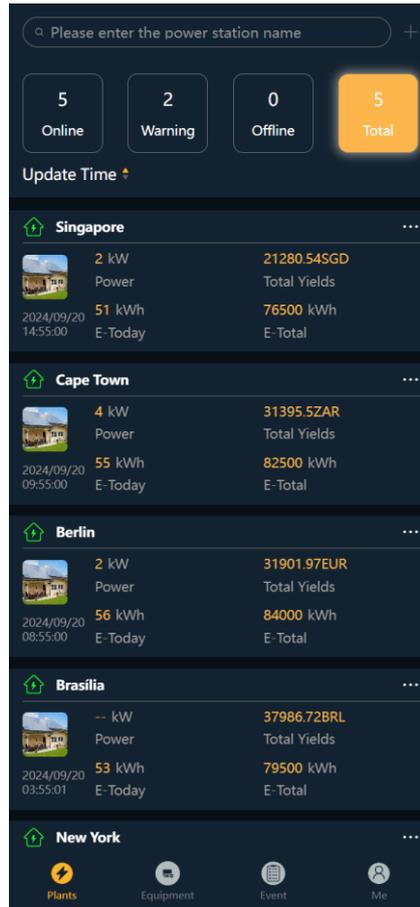
c. Password reset successful, use the new password to log in.



4) There is also a "guest" button below the login button, allowing users to browse the app without registration.



## 2.2 Power Station



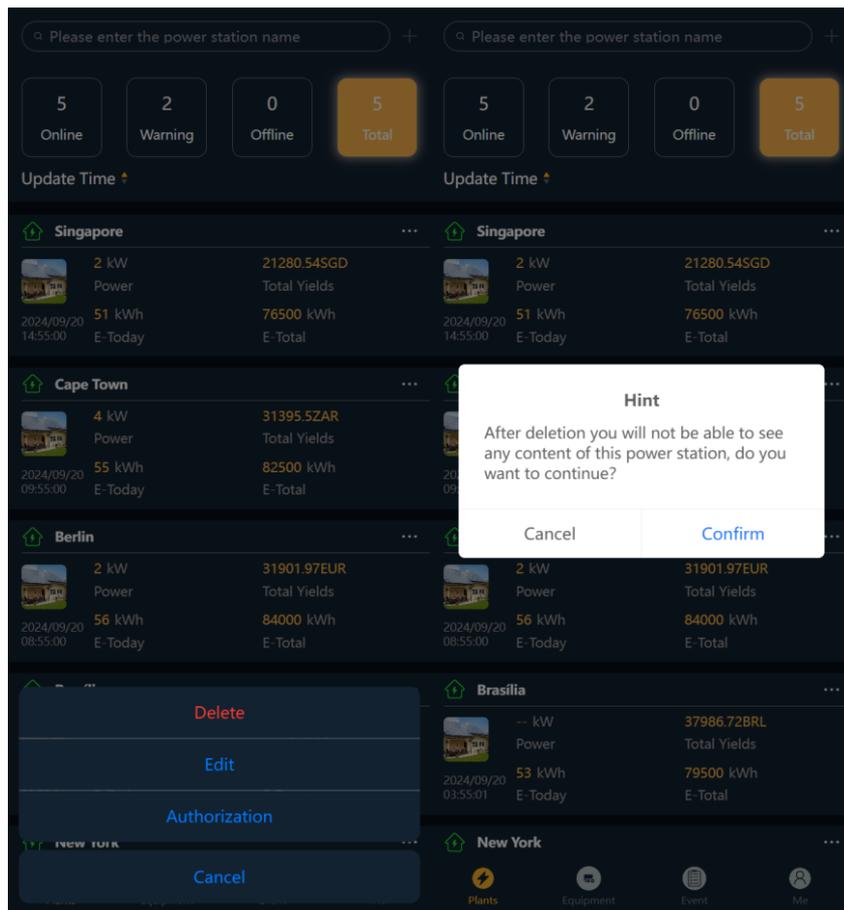
### 2.2.1 Create Power Station

The 'Create Plant' form is divided into three main sections:

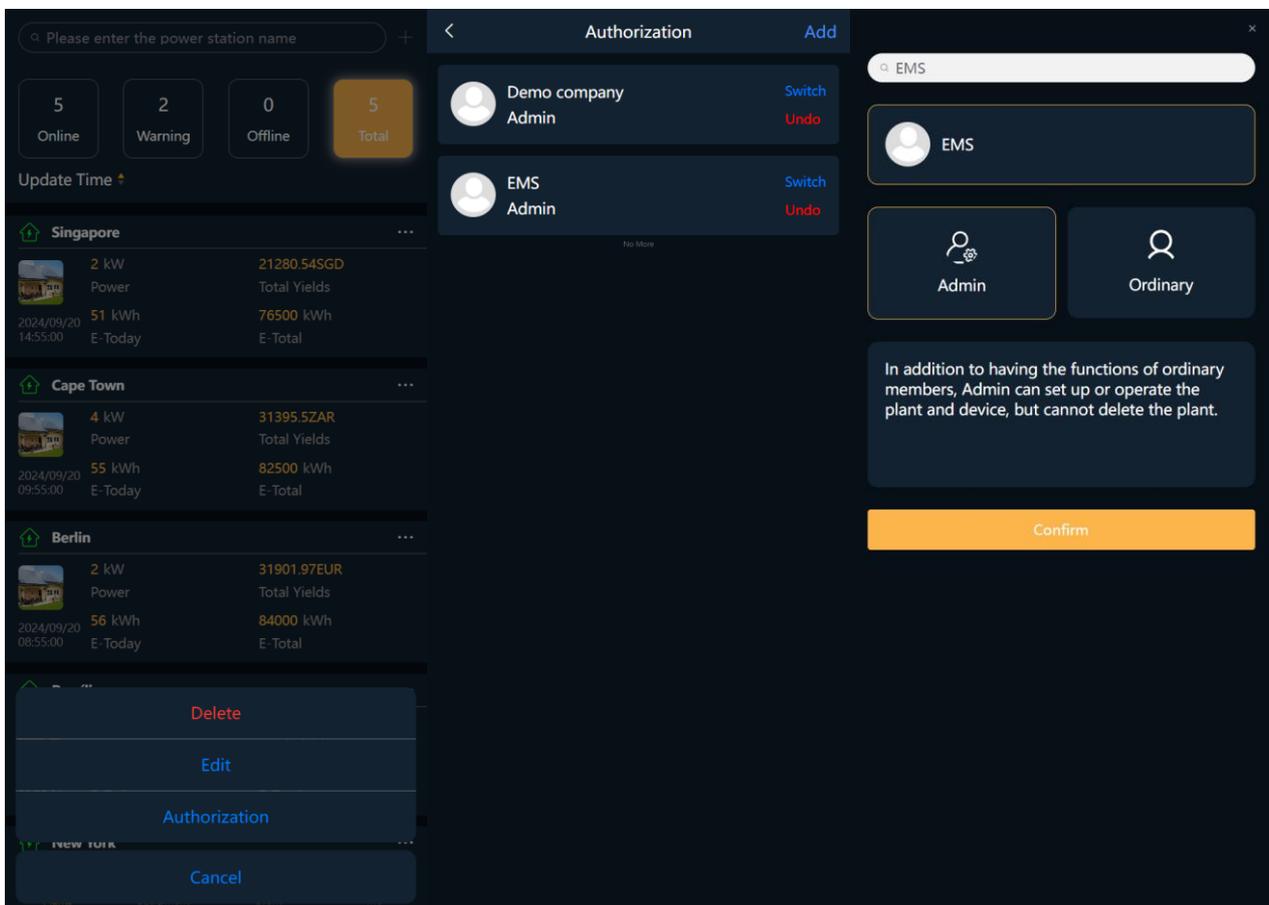
- Basic Information:** Name, Address, Longitude, Latitude, Time zone (UTC+08:00 Beijing, Chongqing, Hong Kong, Urumqi).
- System Info:** Plant Type, PCS Capacity(kWp), Photovoltaic Capacity(kWp), Battery Capacity(kWp), Install Date(kWp).
- Yield Info:** Currency (CNY), Yield (1), Start Date, End Date, Type, Start Time, End Time, Price.

Navigation buttons: Next, Next, Submit.

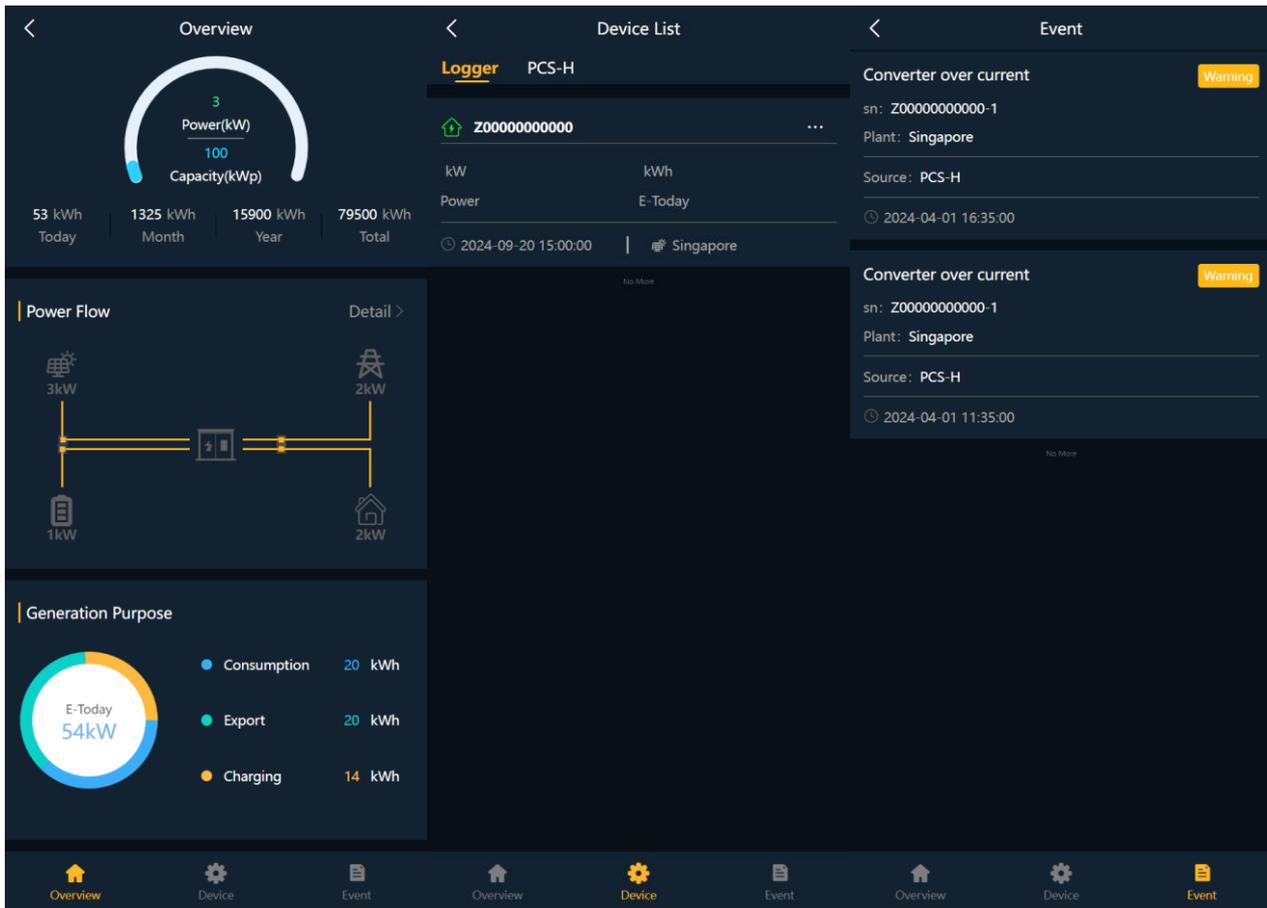
## 2.2.2 Delete Power Station



## 2.2.3 Authorization Information



## 2.2.4 Power Station Details



The power station list in the APP includes all power stations under the account.

Power Station Module Functions:

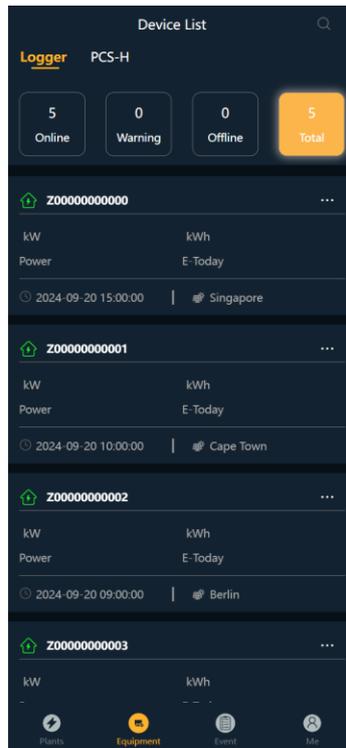
- 1) Power Station Name Filtering: The top input box allows for precise and fuzzy filtering to view the desired power stations.
- 2) Power Station Status Filtering: Four status options below the input box enable filtering to view power stations within a specific range.
- 3) Update Time Filtering: Clicking on the update time filter allows sorting power stations in ascending or descending order based on their update time.
- 4) Create Power Station: Clicking the "Add Power Station" button in the top-right corner allows adding a new power station.
- 5) Edit Power Station: Clicking the expand button on the right of a single power station and selecting "Edit Power Station" brings up the editing interface, which is similar to the one for creating a power station.
- 6) Delete Power Station: Clicking the expand button on the right of a single power station and selecting "Delete Power Station" initiates the deletion process (with a secondary confirmation).
- 7) Authorize Power Station: Clicking the expand button on the right of a single power station and selecting "Authorization Information" redirects to the authorization list, where you can switch identities, cancel authorizations for existing merchants, or add new authorized merchants by clicking the top-right corner.
- 8) Power Station Details: Clicking on a single power station leads to its details, which are divided into three modules (Overview, Equipment, Alerts).
  - a. Overview: Contains basic information about the individual power station (generation information,

energy flow topology diagram, power generation usage chart, power generation data chart, power station weather, energy conservation and emission reduction).

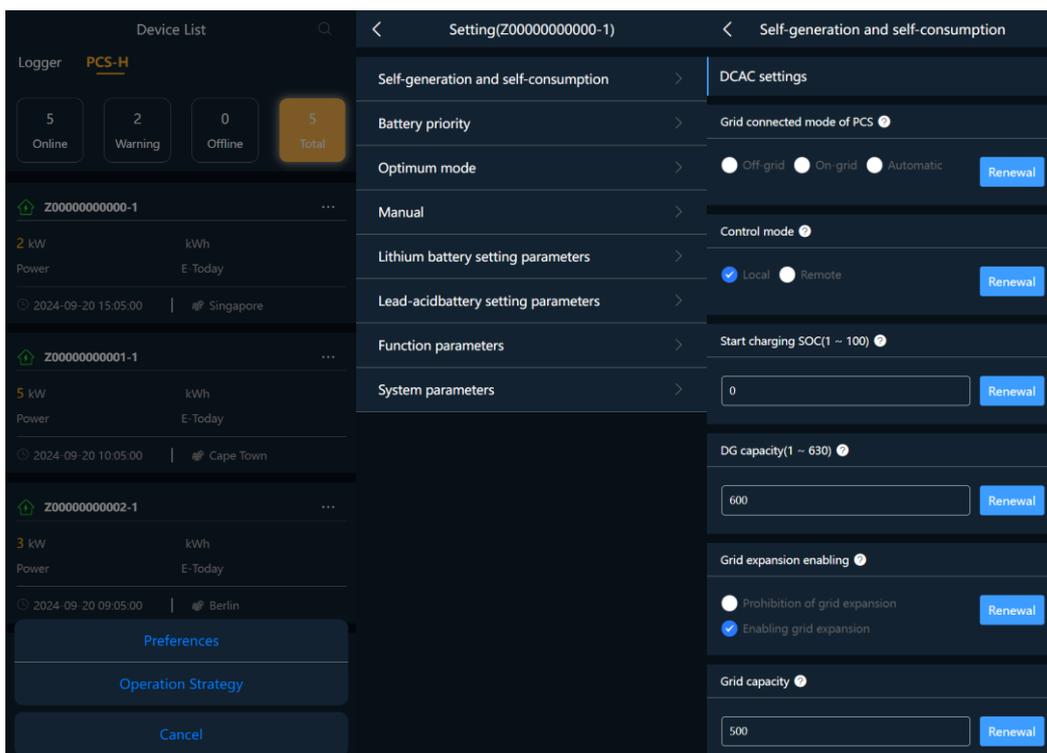
b. Equipment: The equipment list in the power station details only displays the equipment information of the current power station, with functions similar to those of the equipment module.

c. Alerts: The alerts list in the power station details only displays the alert information of the current power station, with functions similar to those of the alerts module.

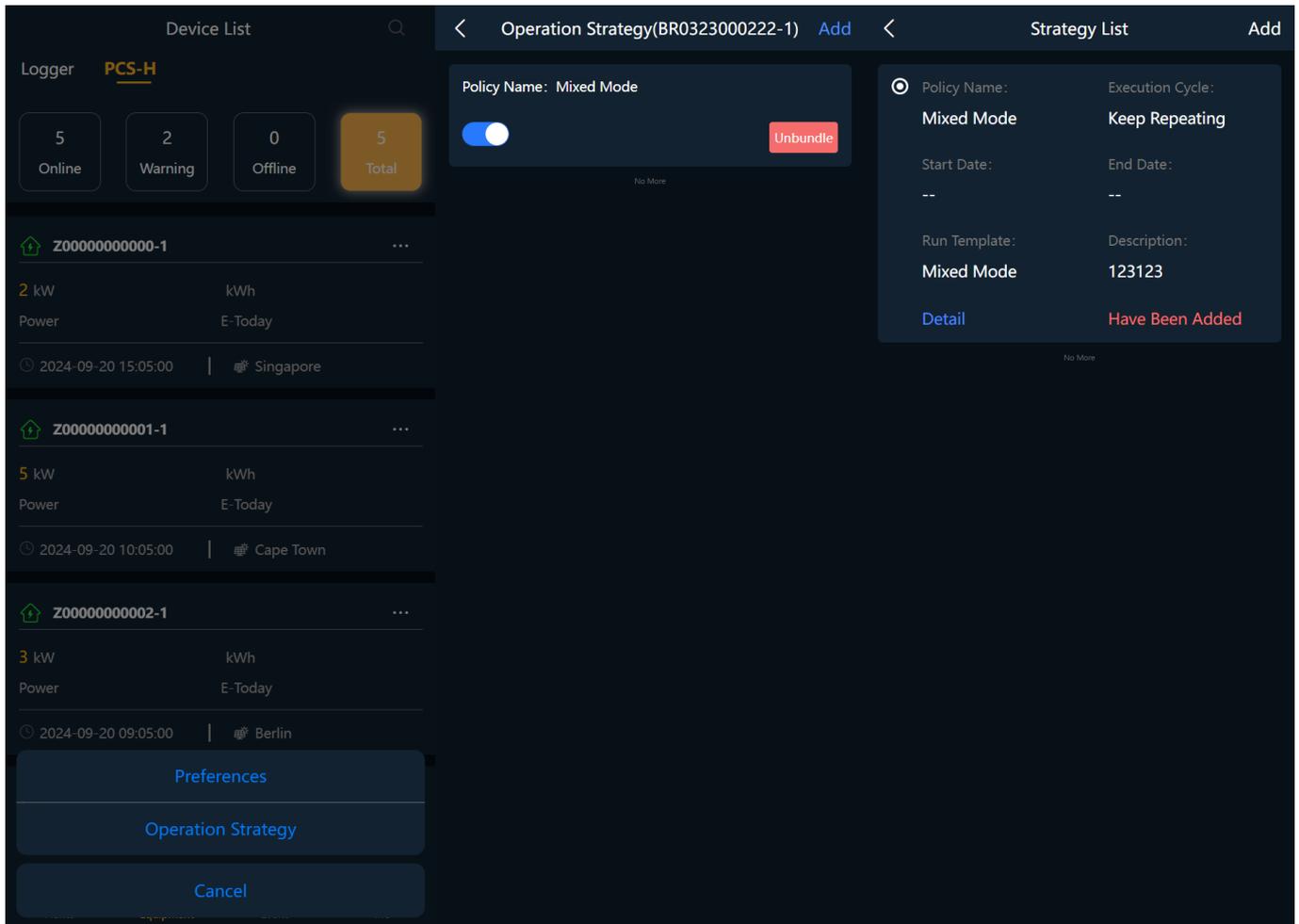
## 2.3 Equipment



### 2.3.1 Parameter Settings



## 2.3.2 Operational Strategy

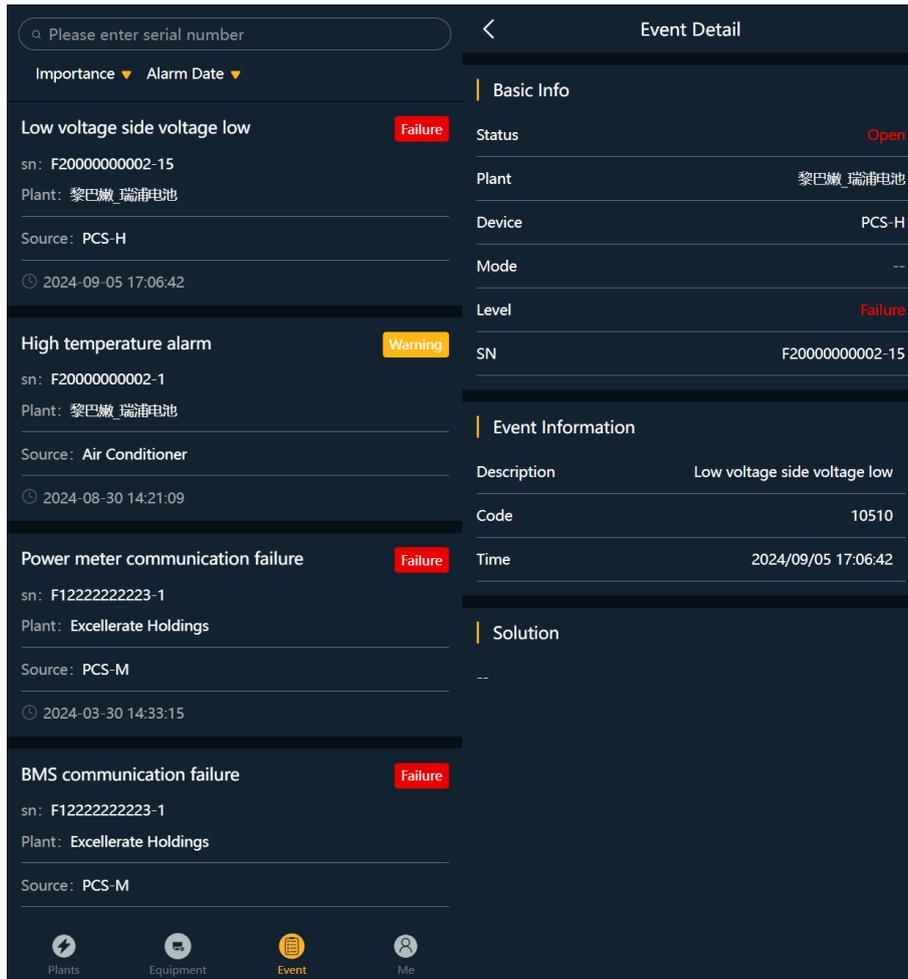


The equipment module list displays all the equipment across all power stations.

Equipment Module Functions:

- 1) Device SN Filtering: Click on the search icon in the top-right corner to filter devices by their Serial Numbers (SN).
- 2) Device Type Filtering: The top of the device list displays all the device types that the equipment belongs to. Click on a specific type to filter the devices.
- 3) Device Status Filtering: Filter devices by selecting one of the four device status options at the top.
- 4) Device Parameter Settings: Click the expand button on the right of a single device and select "Parameter Settings." Choose the corresponding mode to issue parameters to the device.
- 5) Device Operational Strategy: Click the expand button on the right of a single device and select "Operational Strategy." You can enable/disable the bound strategy, unbind the operational strategy, and when there's no matching operational strategy, click the top-right corner to add one by navigating to the strategy list and selecting the desired operational strategy.

## 2.4 Alerts

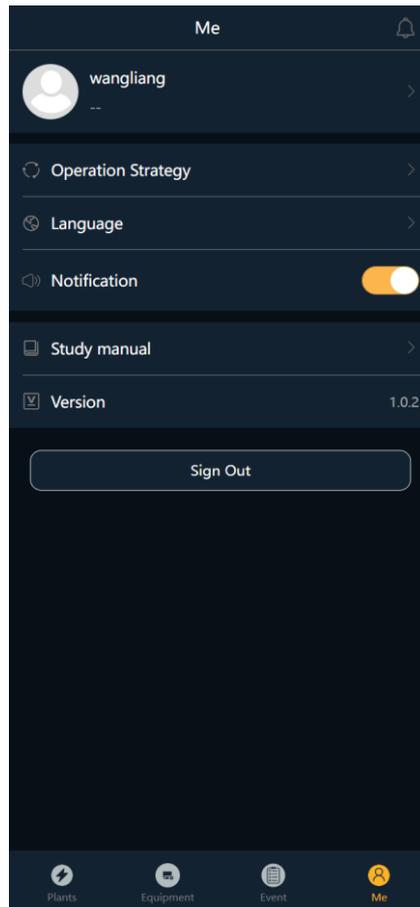


The alerts module list displays all alert information for all devices.

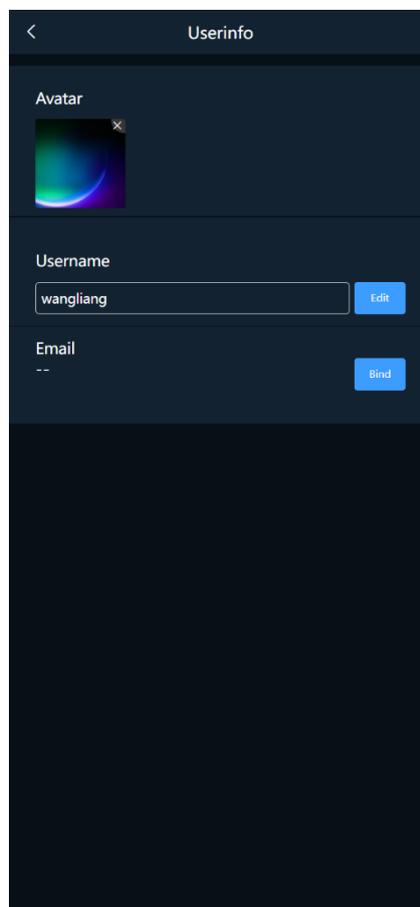
Alerts Module Functions:

- 1) Device SN Filtering: Filter corresponding device alert information by entering the device's Serial Number (SN).
- 2) Alert Level Filtering: Click on the alert level filter and select the corresponding alert level to filter the alert information.
- 3) Alert Date Filtering: Click on the alert date filter and select the corresponding alert date to filter the alert information.
- 4) Alert Details: Click on a single alert to enter the alert details page and view detailed alert information and solutions.

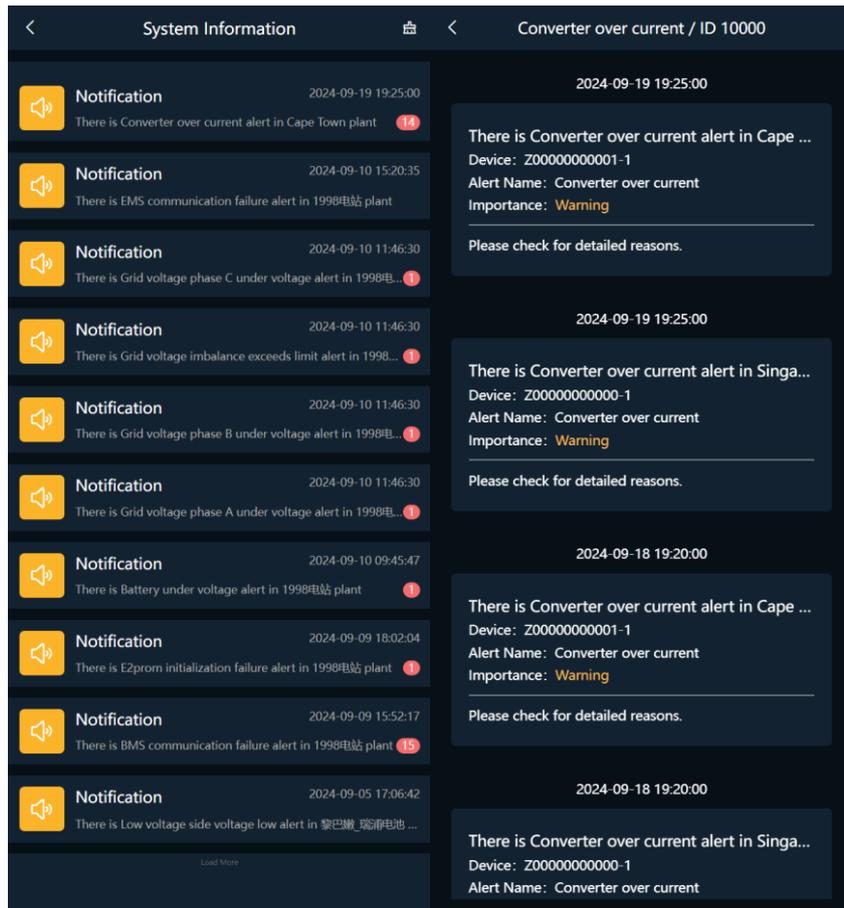
## 2.5 Personal Information



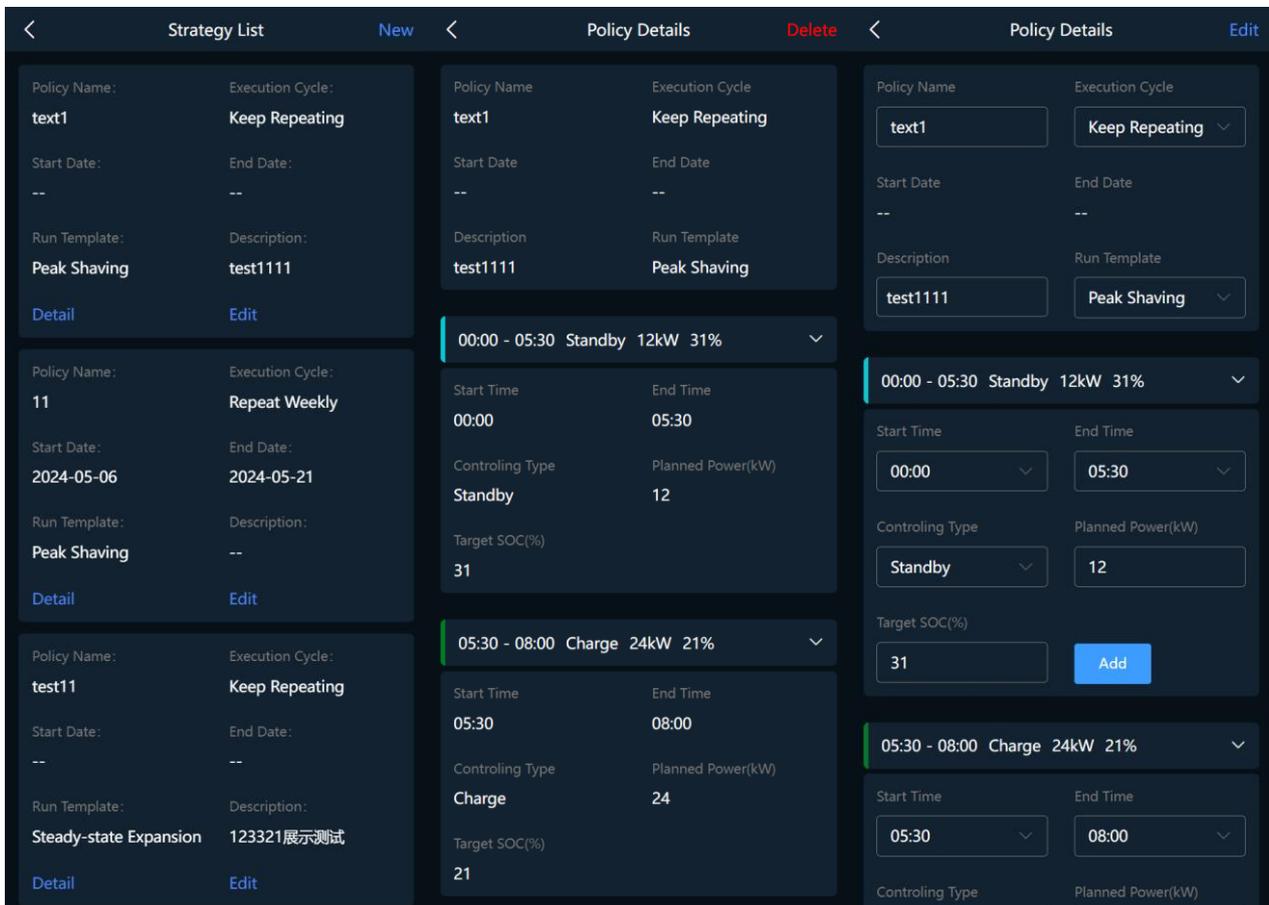
### 2.5.1 Personal Information



## 2.5.2 Message Notifications



## 2.5.3 Operational Strategy



## 2.6 Switch Language



The User Module encompasses personal information (avatar, username, email) during user registration, message notifications, operational strategies, language switching, notification management, learning manuals, app version numbers, and logout functionalities.

- 1) Personal Information: Users can edit their personal information.
- 2) Message Notifications: Clicking on the message button in the top-right corner allows users to view alert notification information for their current account.
- 3) Operational Strategies: Users can manage their created operational strategies here, including editing, deleting, and creating new ones.
- 4) Switch Language: Users can switch to their preferred language.
- 5) Notifications: Users can control whether to receive push notifications by enabling or disabling them.
- 6) Learning Manual: The learning manual serves as the product's user guide.
- 7) Version Number: Displays the current version number of the app.
- 8) Logout: Clicking the logout button logs out the current account.

## 3 Cloud Platform User Interface

### 3.1 Overview

The Cloud Platform is an intelligent management system based on cloud computing and big data technology, specifically designed to meet the demands of efficient operation and maintenance, optimized dispatching, and real-time monitoring of energy storage equipment in power systems. With the rapid development of renewable energy, the scarcity of flexible resources in power systems has become increasingly prominent, leading to a gradual increase in the value of energy storage in power systems. This platform aims to provide users with efficient, stable, and economical energy storage services through integrated management and intelligent analysis.

### 3.2 My Power Stations

The My Power Stations section is a core functional area of the system, designed specifically for power station managers and operation and maintenance personnel. This section offers a one-stop power station management experience, enabling users to conveniently monitor, control, and manage power stations. By adding data collectors, real-time data monitoring of power stations is achieved, providing real-time data for power station data analysis and alarm reporting. The feature of switching between power stations facilitates quick access to detailed data of each power station. The use of data charts and energy flow diagrams meets users' needs for data monitoring and analysis of power stations.

### 3.3 Large Screen Display

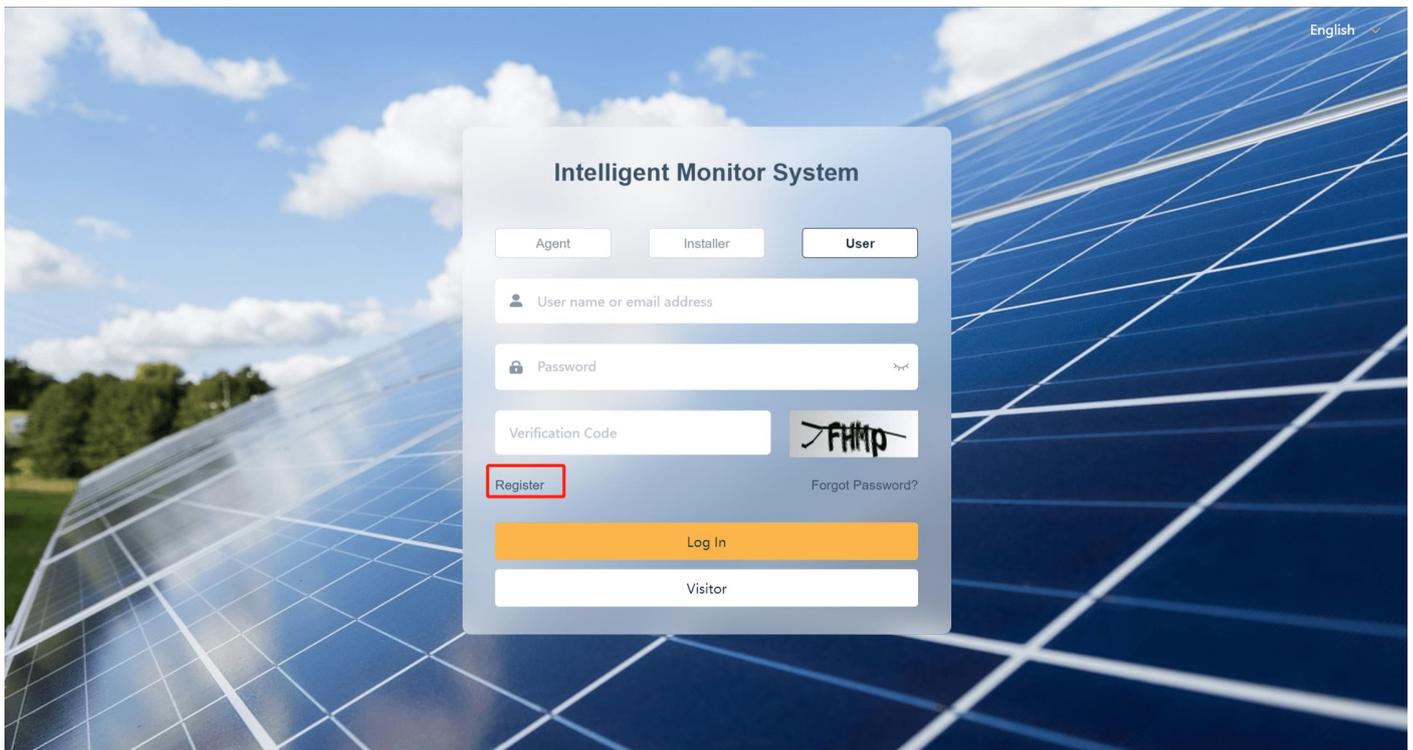
The Large Screen Display section helps users quickly summarize and visualize power station data, providing an intuitive and clear display of power station data. It allows users to comprehensively understand the current operation status of power stations and make more scientific and effective management decisions.

### 3.4 Registration and Login

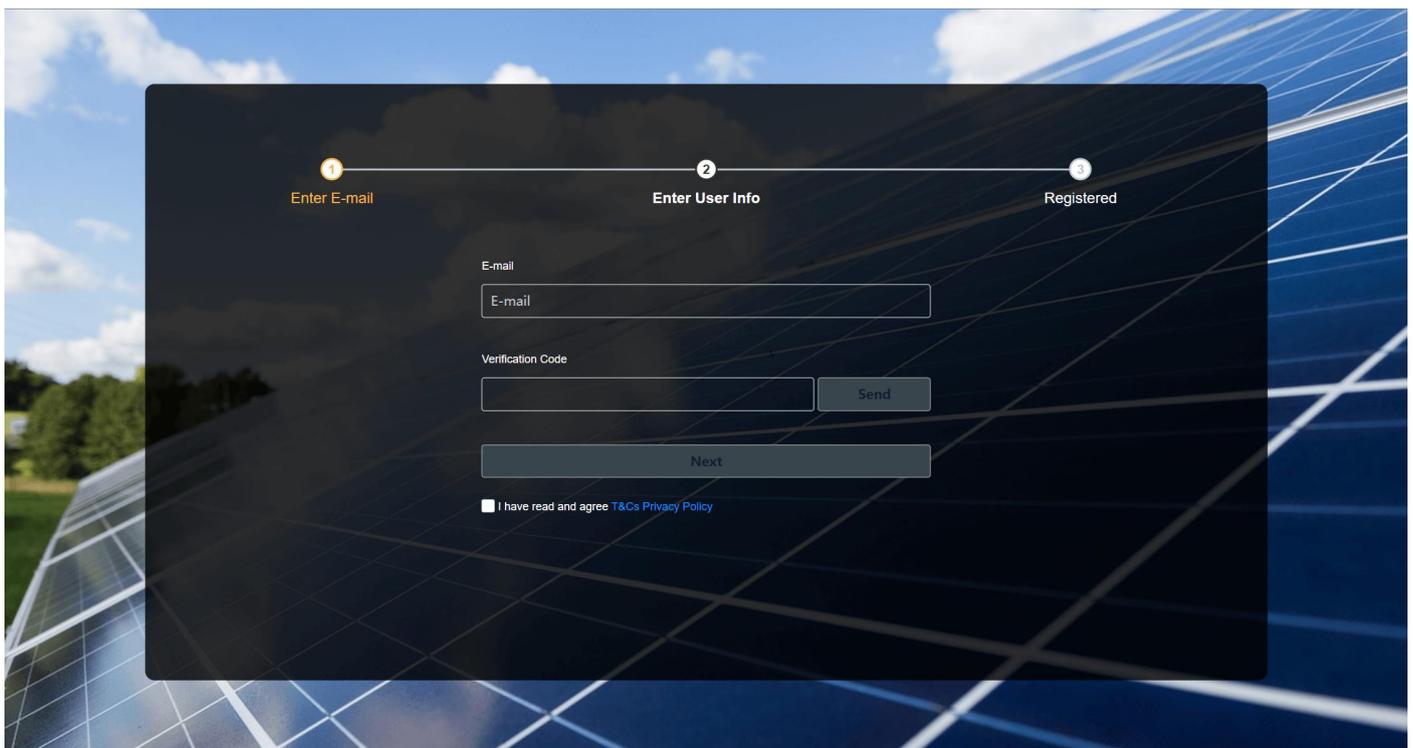
#### 3.4.1 Registration

If your email address is being used for the first time to register for the Cloud Platform User Interface, you need to fill in user information according to the prompts on the page during the registration process. Once the registration is successful, you can log in. The following is a diagrammatic representation.

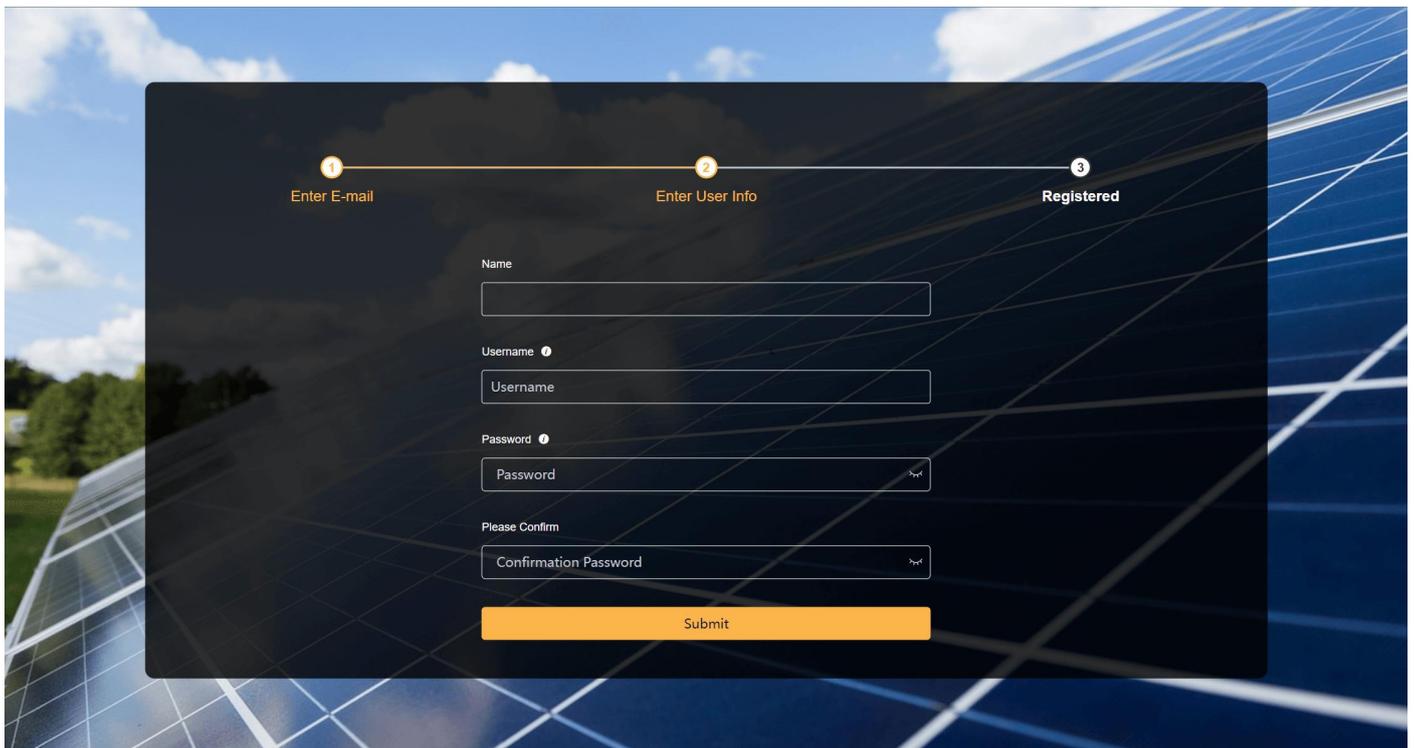
## 1) Start Registration



## 2) Obtain Verification Code



### 3) Fill in User Information

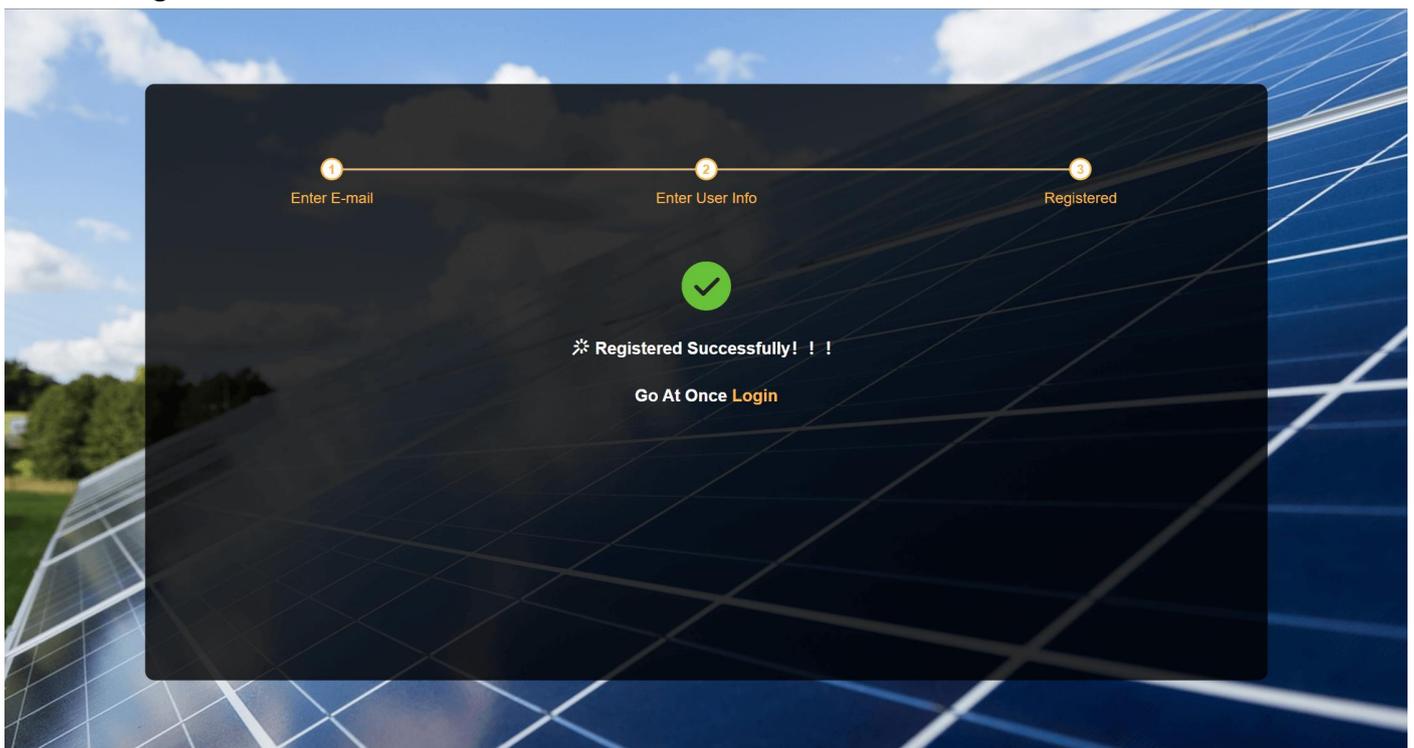


The screenshot shows a registration form on a dark background with a solar panel grid pattern. At the top, a progress bar indicates three steps: 1. Enter E-mail, 2. Enter User Info, and 3. Registered. The second step is active. The form contains the following fields:

- Name:
- Username:
- Password:
- Please Confirm:

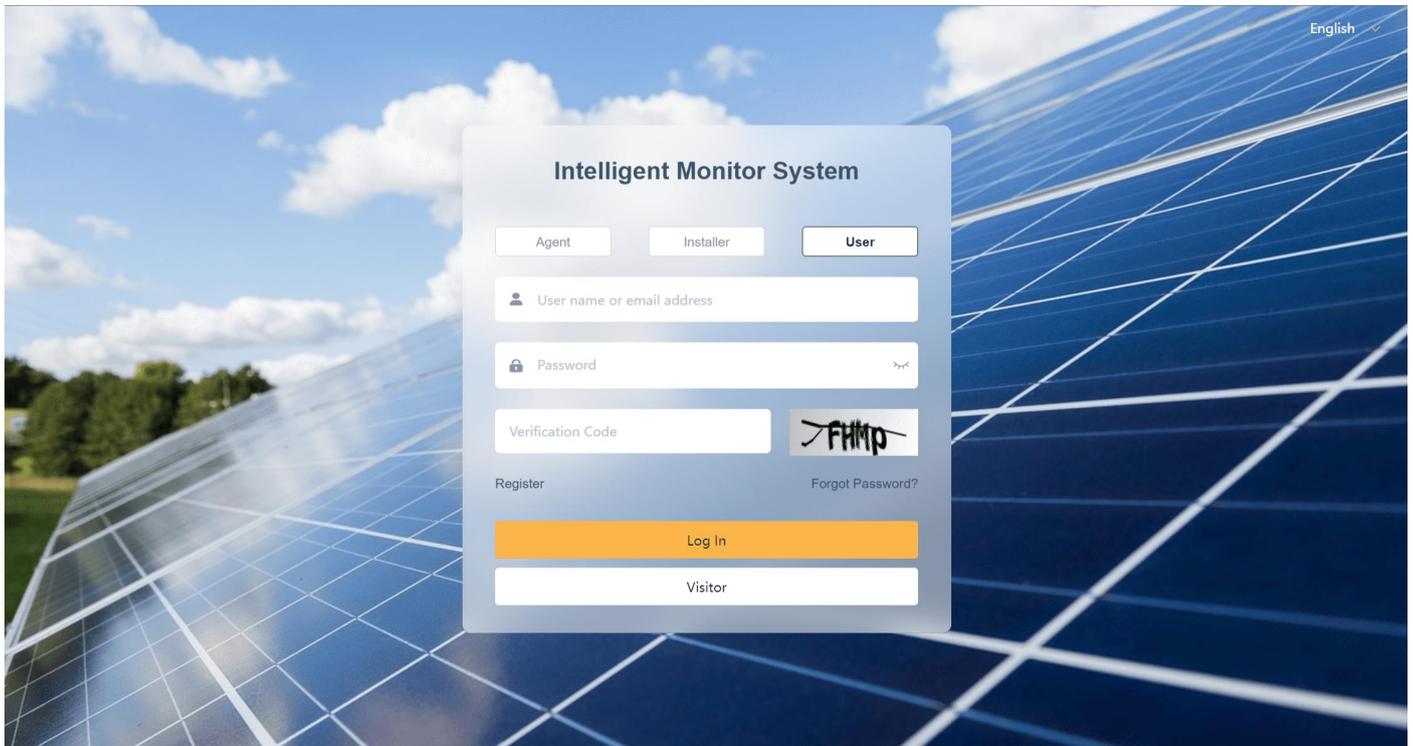
A yellow "Submit" button is located at the bottom of the form.

### 4) Registration Successful

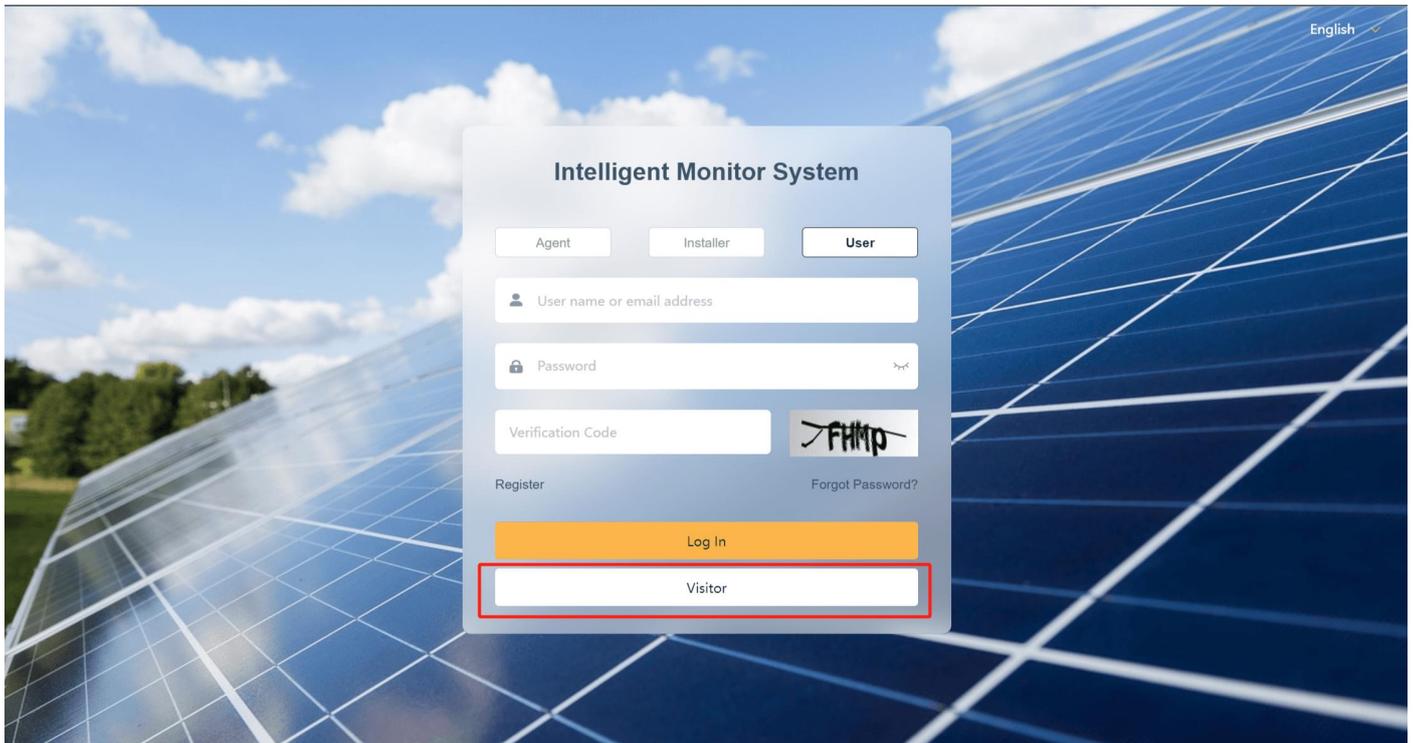


### 3.4.2 Login

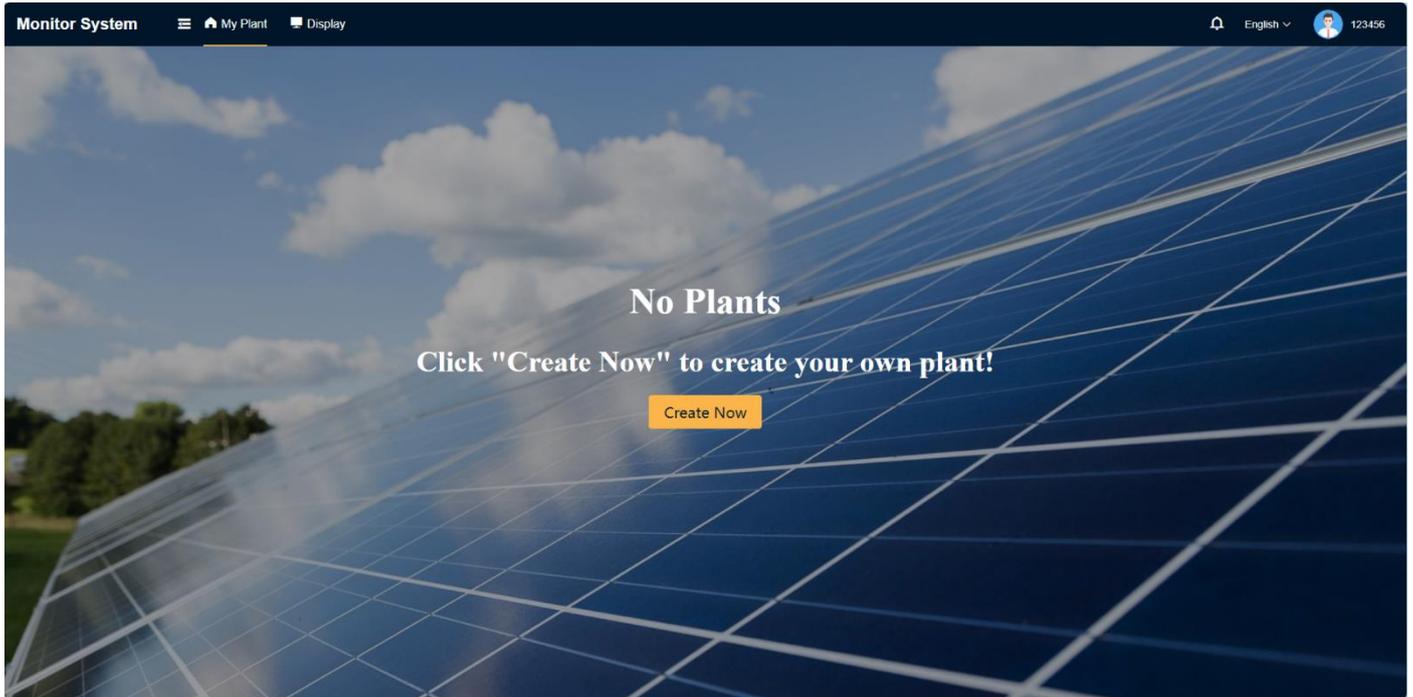
After completing the account registration, select the "User" role, use the email or username you used during registration to log in, enter the corresponding password, and click "Login" to access the Cloud Platform User Interface.



To facilitate users in quickly experiencing the Cloud Platform's functions, the platform has enabled a guest login feature. Simply click "Guest Login" at the bottom of the login page to enter the User Interface for a browsing experience.



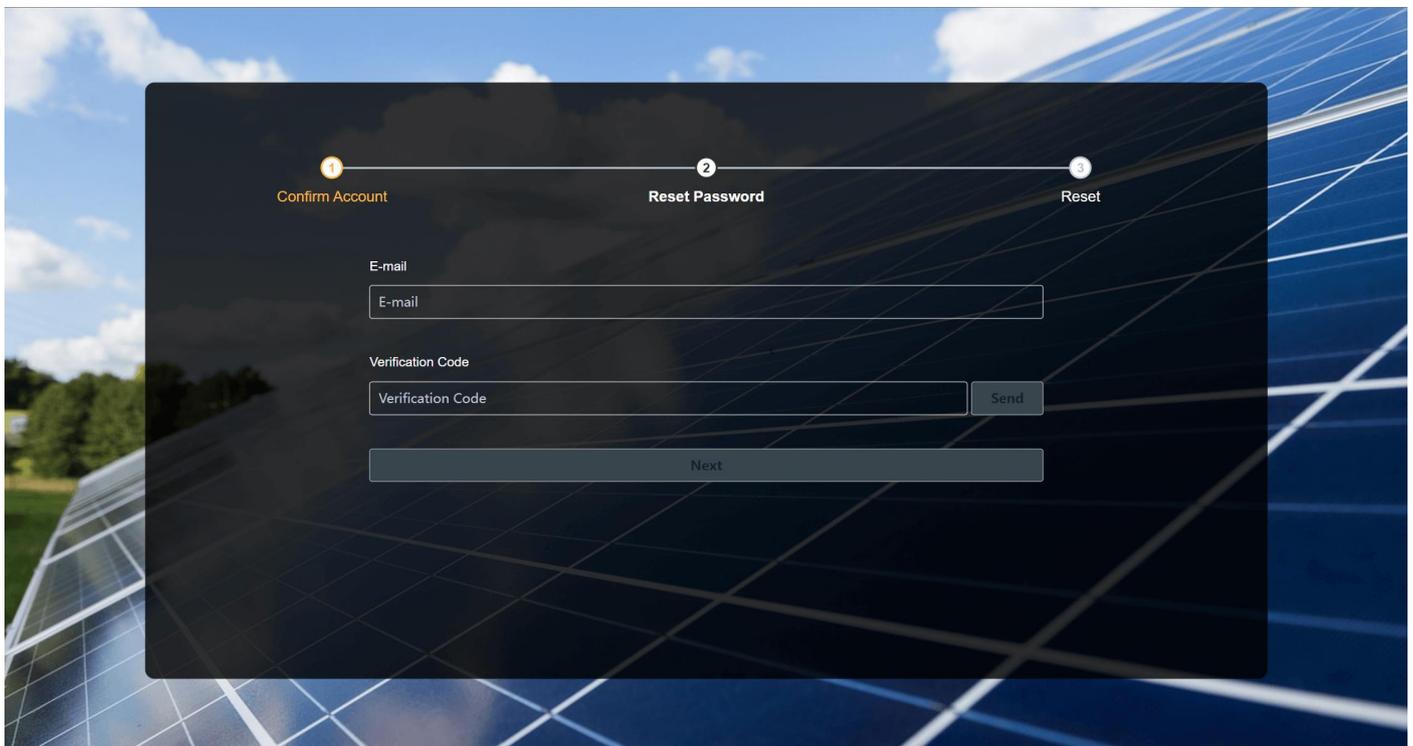
For first-time login accounts, a prompt to create a station page will be displayed. Please click "Create Now" to establish your dedicated power station.



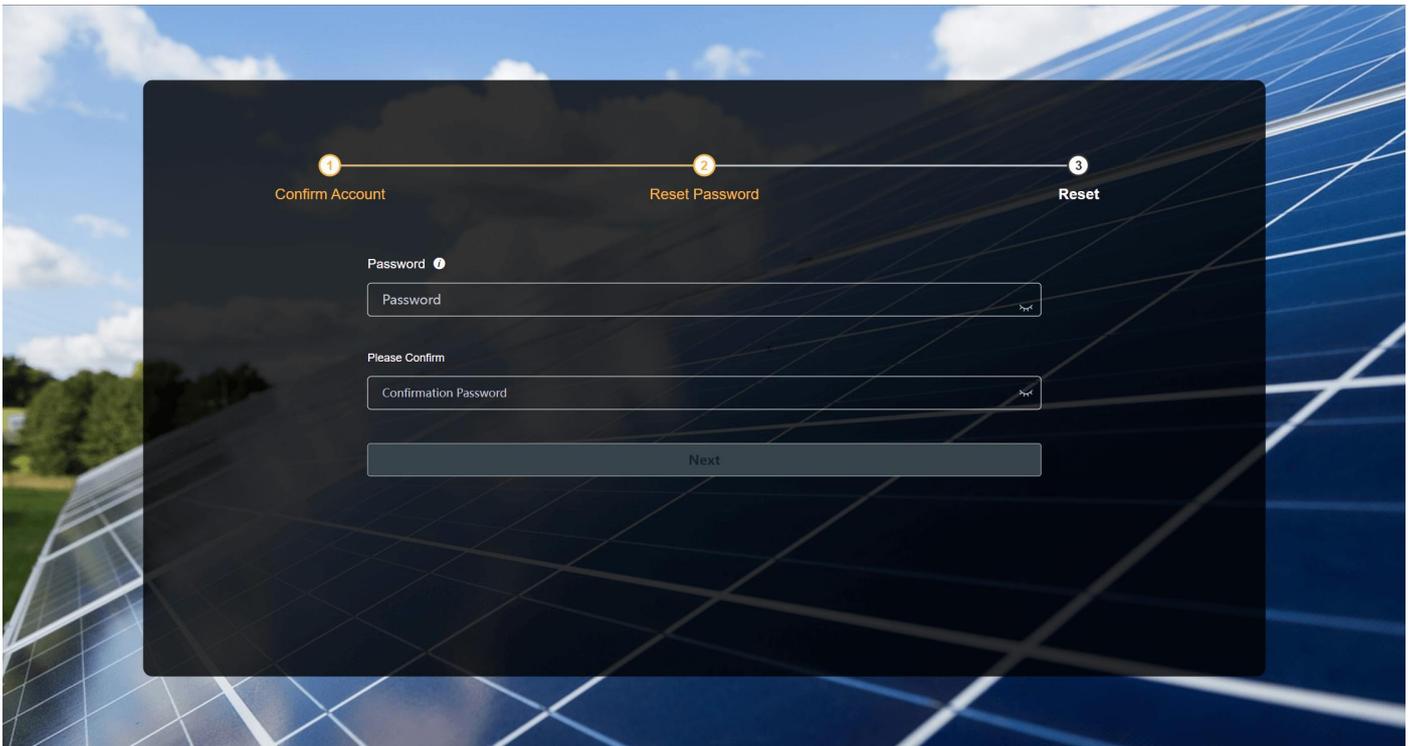
### 3.4.3 Forgot Password

When you forget your account password, click "Forgot Password?" to enter the password reset interface and complete the password reset through the email used during registration.

#### 1) Confirm Account

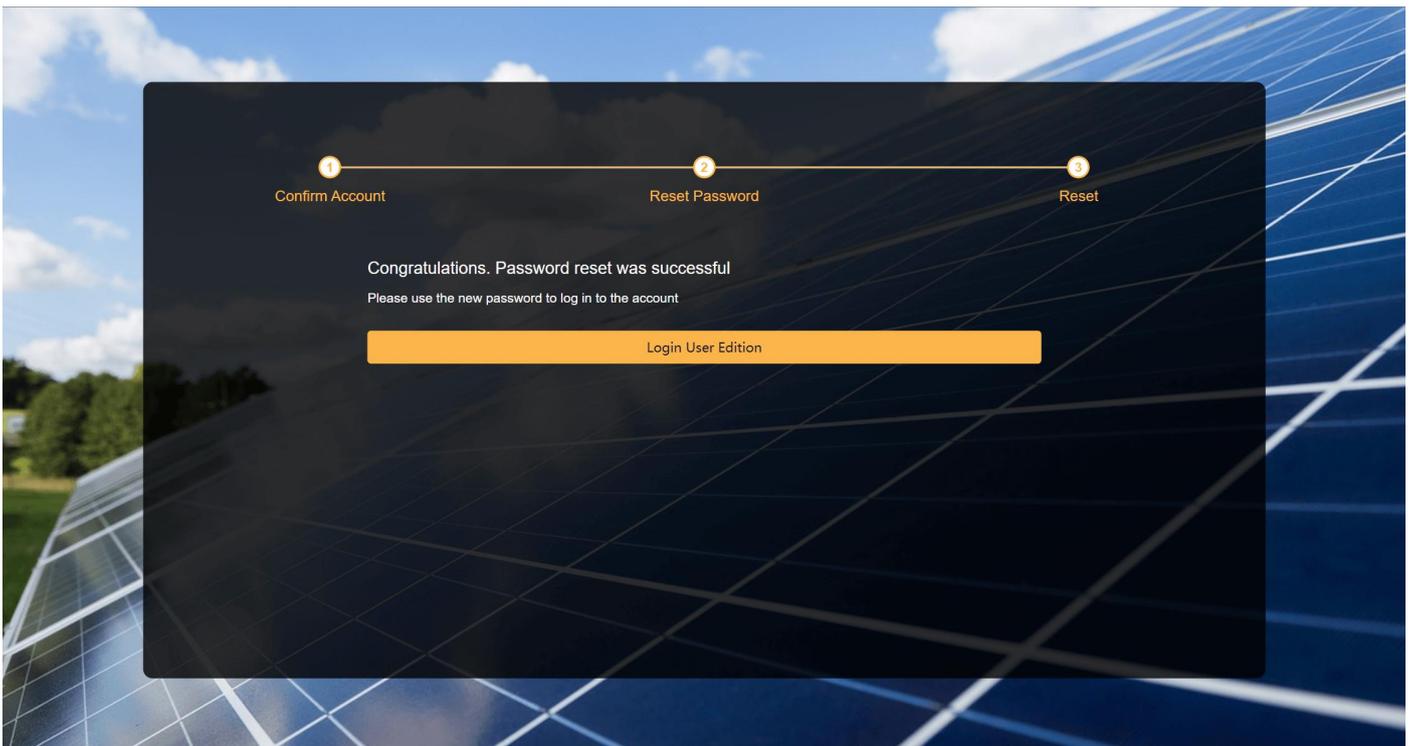


## 2) Reset Password



The screenshot shows a dark-themed modal window with a progress indicator at the top. The progress bar has three steps: 1. Confirm Account, 2. Reset Password (highlighted in orange), and 3. Reset. Below the progress bar, there are two input fields: 'Password' and 'Please Confirm' (with 'Confirmation Password' inside). Each field has a 'x' icon on the right. At the bottom, there is a 'Next' button.

## 3) Reset Successful

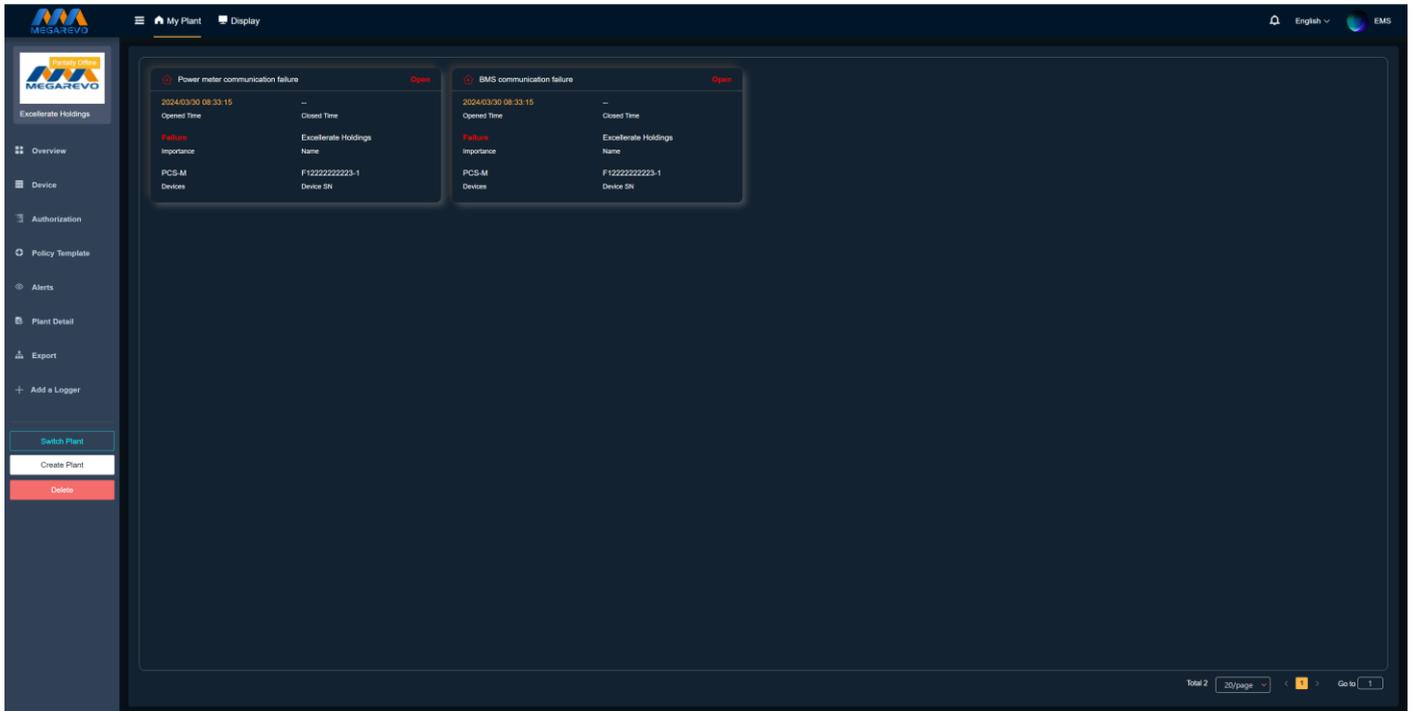


The screenshot shows the same dark-themed modal window. The progress bar now has step 3, 'Reset', highlighted in orange. The main content area displays the text: 'Congratulations. Password reset was successful' and 'Please use the new password to log in to the account'. Below this text is a large orange button labeled 'Login User Edition'.

## 3.5 Basic Functions

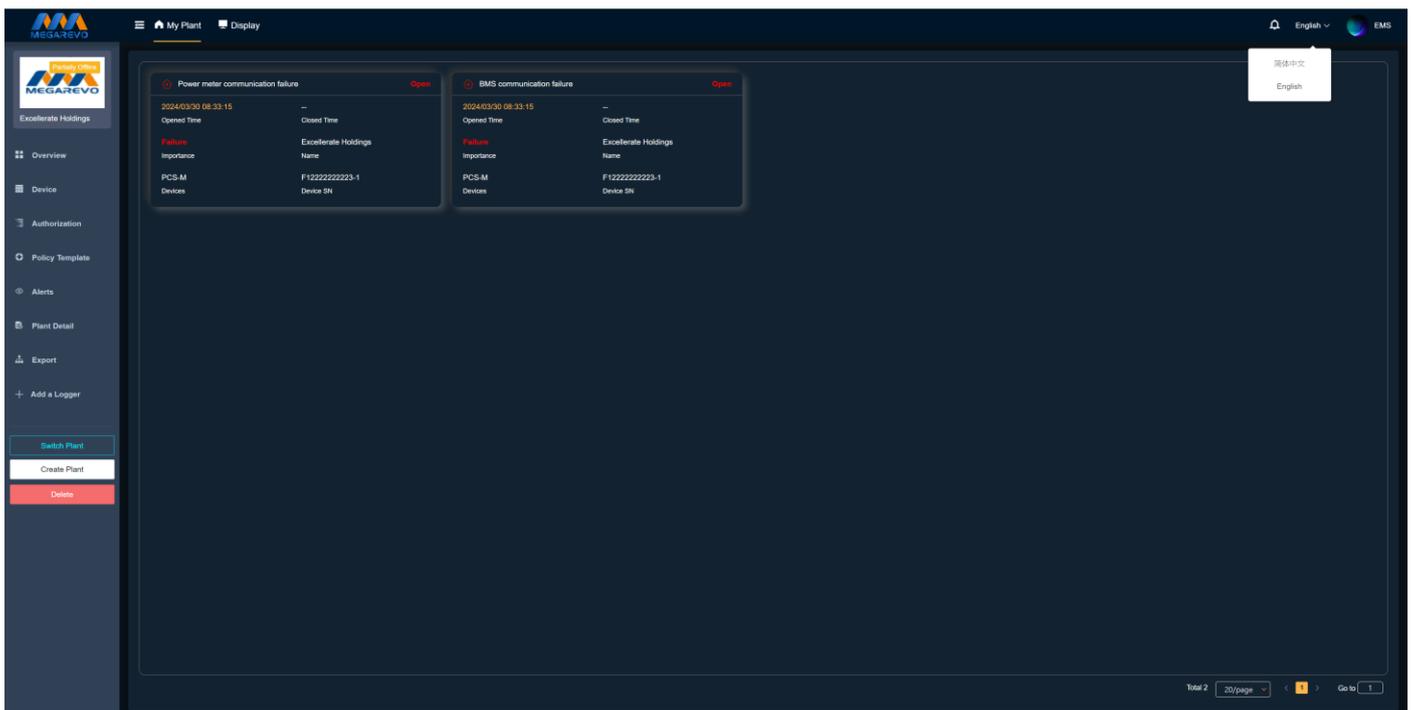
### 3.5.1 Message Alerts

Clicking on this icon will display the current alarm situations occurring in the power station, supporting the display of alarm messages within the last six months.



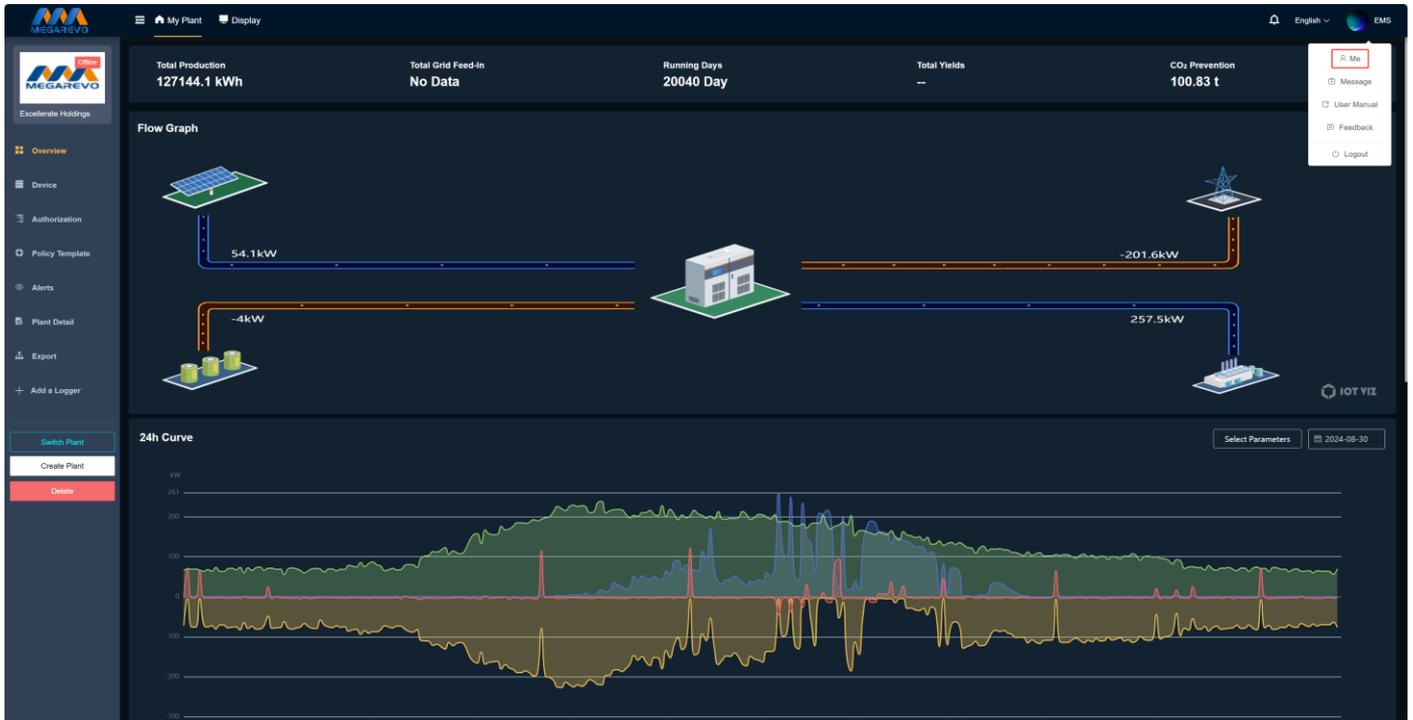
### 3.5.2 Language Switching

You can select the interface language based on your usage needs. The system currently supports both Simplified Chinese and English.



### 3.5.3 Personal Settings

This section supports modifying the name, email address, username, and account password set during registration. Additionally, it includes an account deletion function, which can be performed if the account meets the conditions for deletion.



**Personal Center**

Me

Account Cancellation

Message

User Manual

Feedback

Avatar: [Profile Picture]

Name: Guest

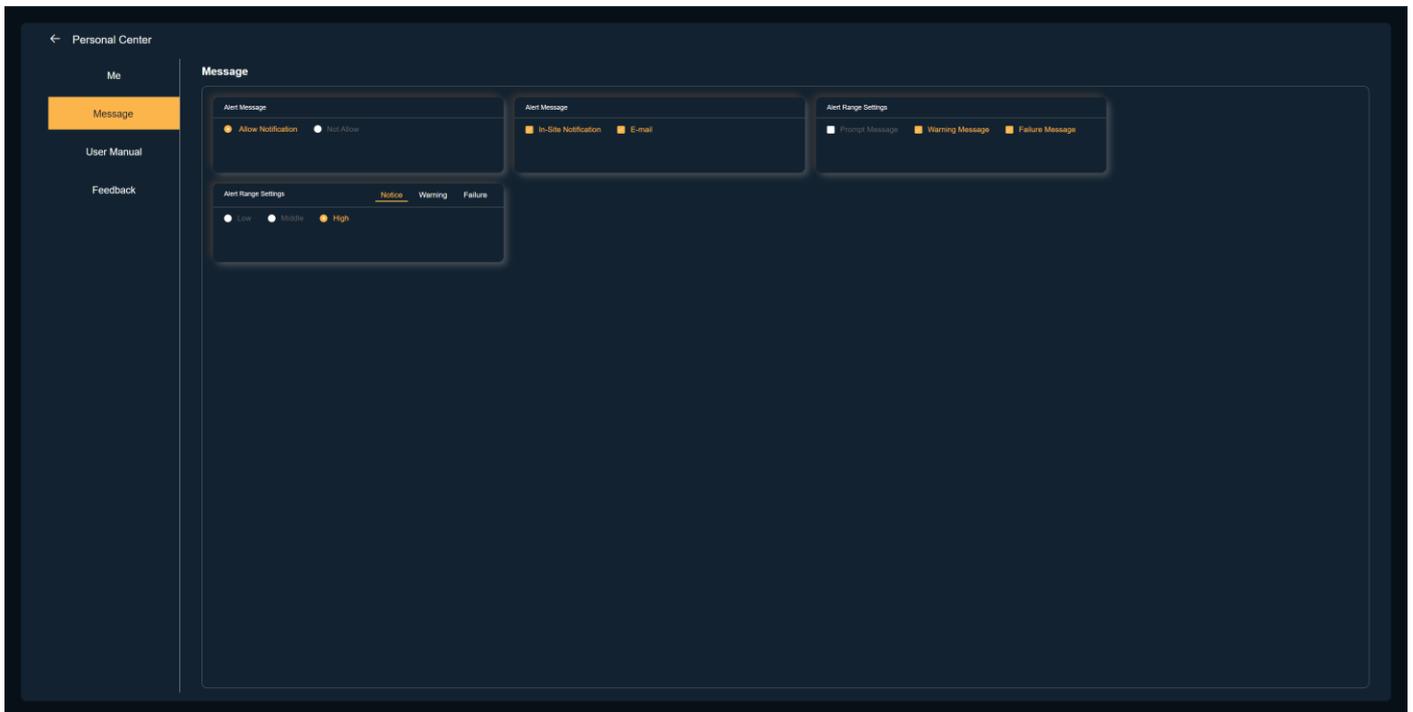
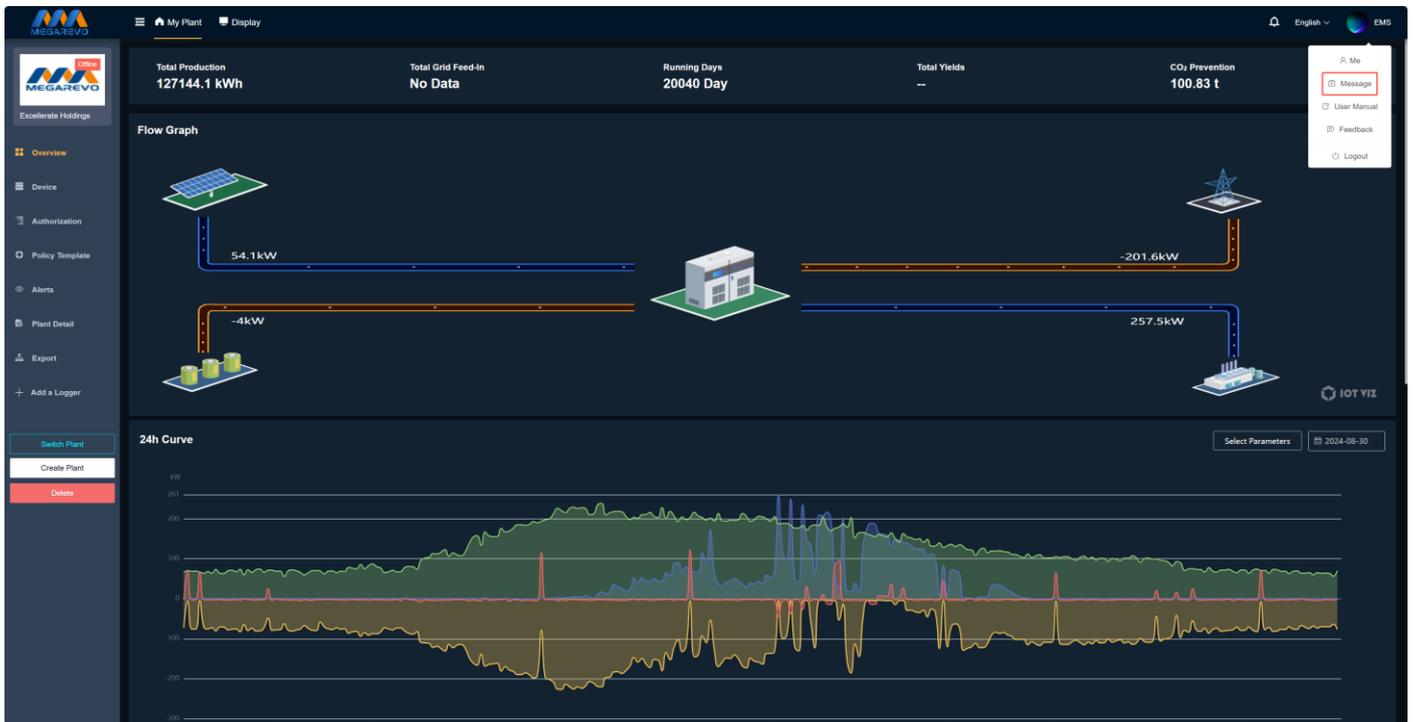
Email: Please Enter Email

Password: [Masked]

Username: guest

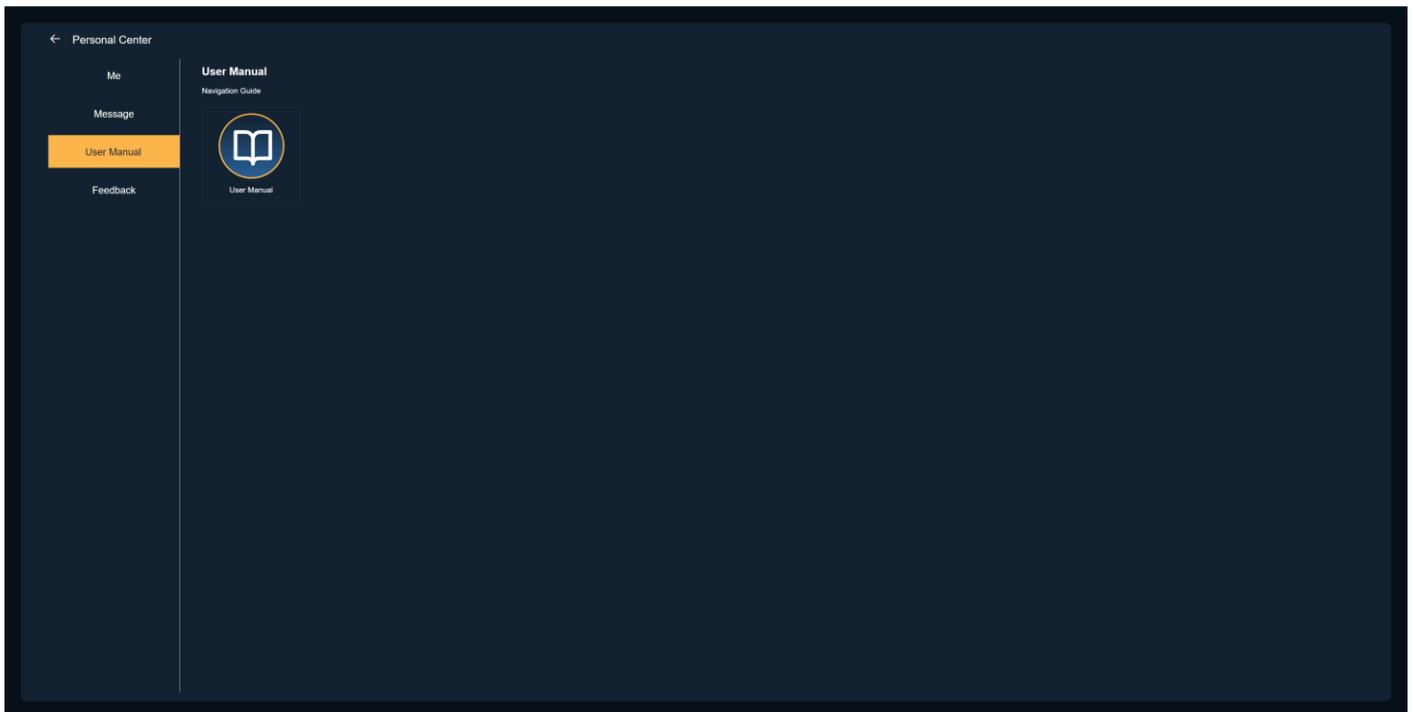
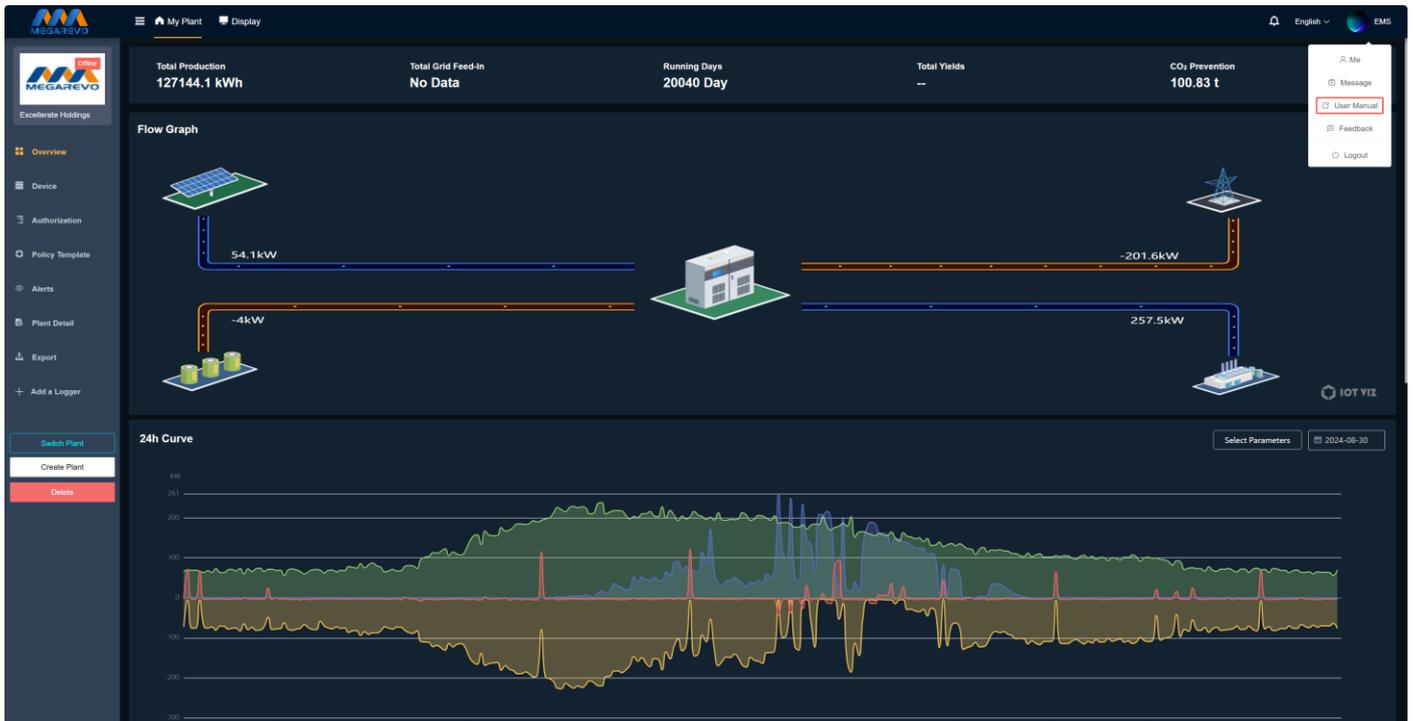
### 3.5.4 Message Settings

The Message Settings section allows you to configure the notification method for alarm information based on your needs. Configuration options include: whether to allow notifications, the method of receiving alarm information, the notification alarm level, and the notification alarm frequency.



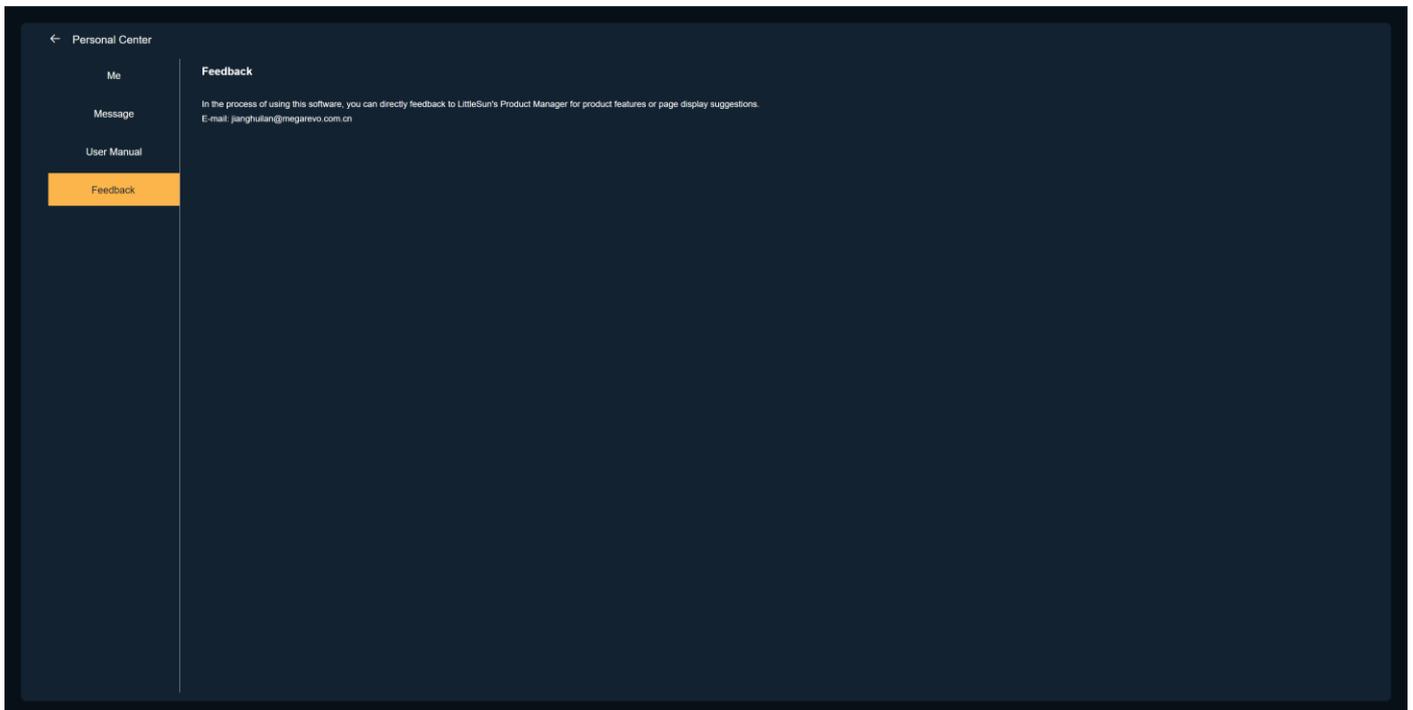
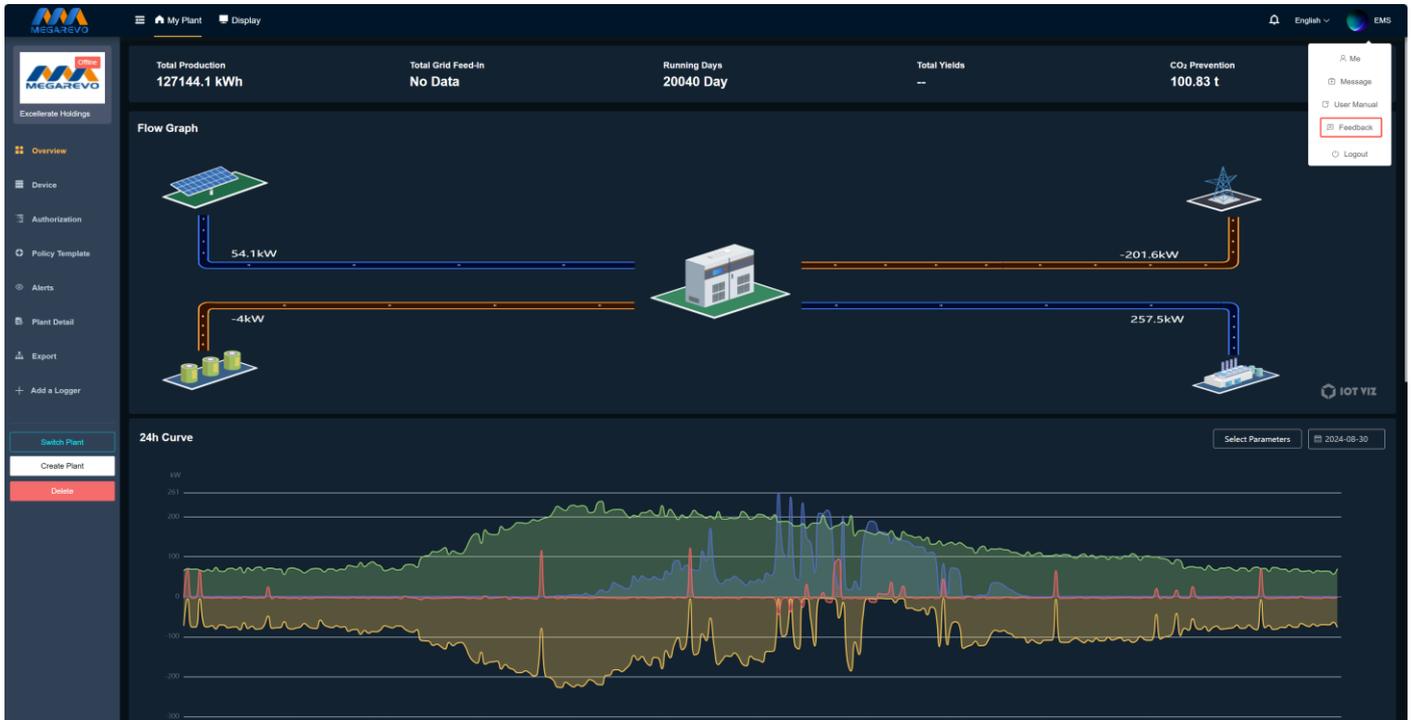
### 3.5.5 User Guide

The User Guide section provides a link to the platform's user manual, which can be safely accessed by clicking the link.



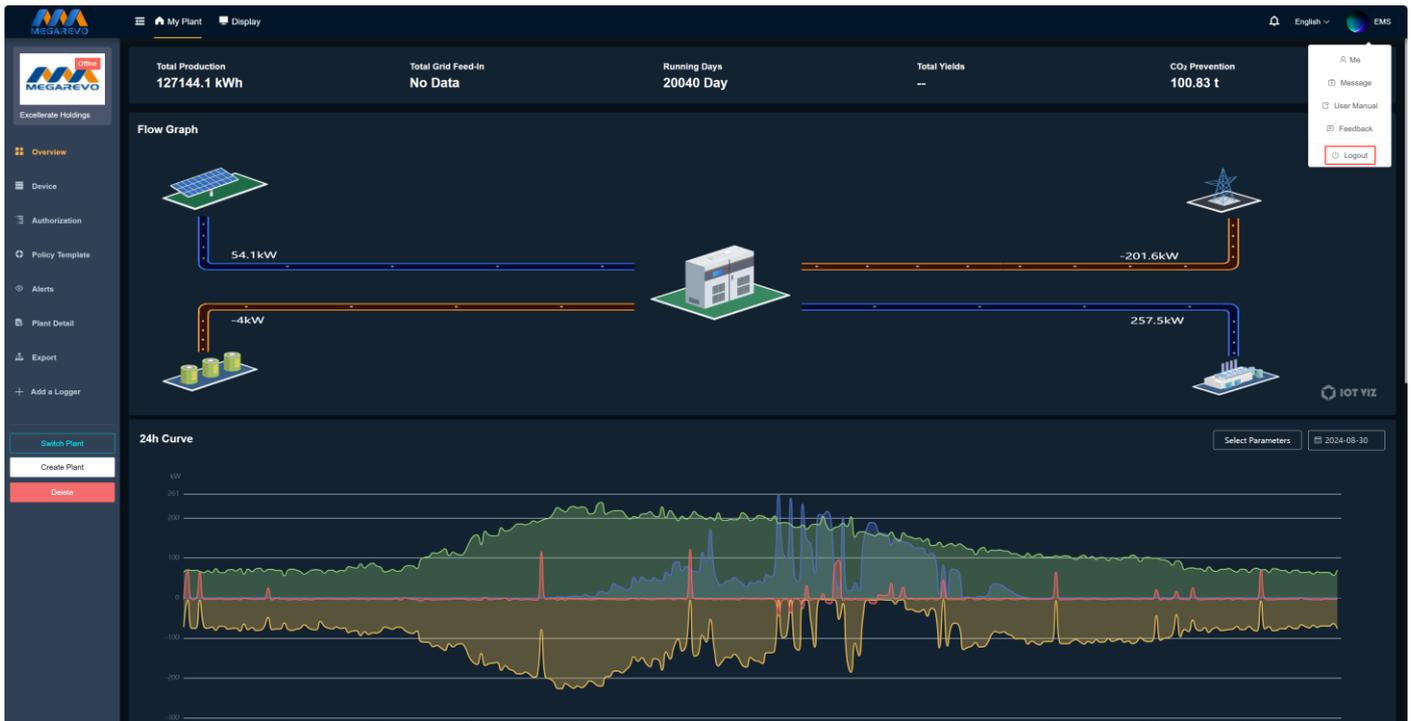
### 3.5.6 Feedback and Suggestions

The Feedback and Suggestions section offers a channel for submitting suggestions and feedback. Any suggestions regarding product features or page display can be directly emailed to the platform's product manager.



### 3.5.7 Logout

Clicking "Logout" will securely exit the current account's login status and redirect to the login page.



## 3.6 Create Power Station

Users can create their own power stations through the "Create Power Station" section. After binding devices, data collection, storage, and statistics can be performed on the power station, enabling real-time monitoring of its operation.

When there are no power stations under an account, a prompt to create a power station will be displayed upon login. Click "Create Now" to enter the power station creation page.

If an account already has power stations and the user wishes to create another one, click "Create Power Station" in the menu bar to access the power station creation page.

Creating a power station requires completing basic information, system information, and revenue information, which will be displayed on the power station information page upon successful creation.

#### 1) Basic Information Input

Fill in the power station name, click on the map in the "Power Station Location" section to select the site, and the region, address, and latitude/longitude will automatically correspond to the site's location data. The power station's timezone will automatically match the current region's timezone, and the address field can be manually modified.

#### 2) System Information Input

Select the type of power station (residential power station, commercial and industrial power station), choose the installation date, and fill in the installer and installed capacity.

#### 3) Revenue Information Input

Select the currency unit to use when calculating revenue. The revenue calculation period (optional) can be added or deleted.

Create Plant
Cancel Create Now

#### Basic Info

\* Name

\* Region

\* Time Zone

\* Address

\* Location

#### System Info

Plant Type:  Install Date:  Installer:

\* PCS Capacity(KW)  Battery Capacity(KWH)  Photovoltaic Capacity(KWp)  DG Capacity(KW)

#### Yield Info

\* Currency

Add

Date	Type	Time	Price	Operation
<input type="text" value="-"/>	<input type="text" value="Flat"/>	<input type="text" value="-"/>	<input type="text"/>	<input type="text" value="⊕"/>

### 3.7 Switch Power Station

The user interface only displays the content of a single power station under the account. When multiple power stations are created under the account, the data of different power stations can be viewed by switching through the "Switch Power Station" section. The power station switching page displays all power stations under the account, along with their names, images, and network status.

My Plant Display

English EMS

- Overview
- Device
- Authorization
- Policy Template
- Alerts
- Plant Detail
- Export
- Add a Logger

Switch Plant

Create Plant

Delete

Switch Plant

Excellerate Holdings

p1

Incomplete

test1123

Incomplete

MEGA测试

Incomplete

mega\_1

Incomplete

test0508

Incomplete

工厂测试

Offline

黎巴嫩\_磷酸电池

Offline

test1111

Incomplete

测试EMS

Offline

Total 11  < > Go to

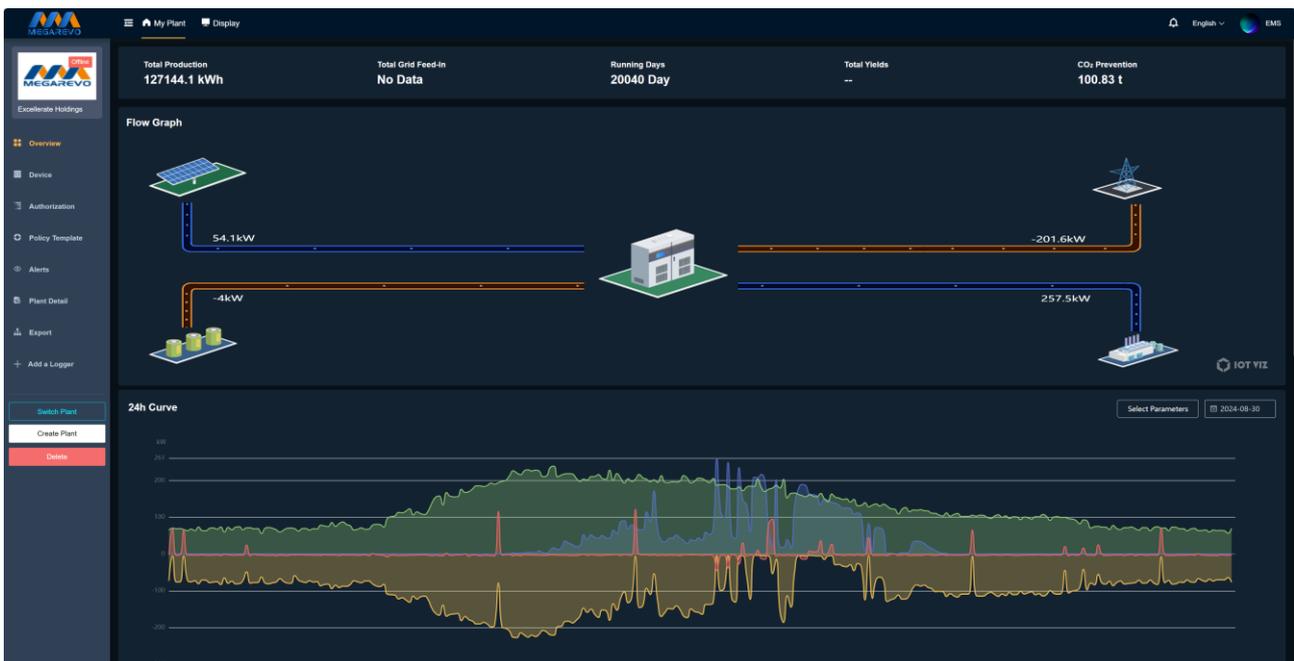
### 3.8 Delete Power Station

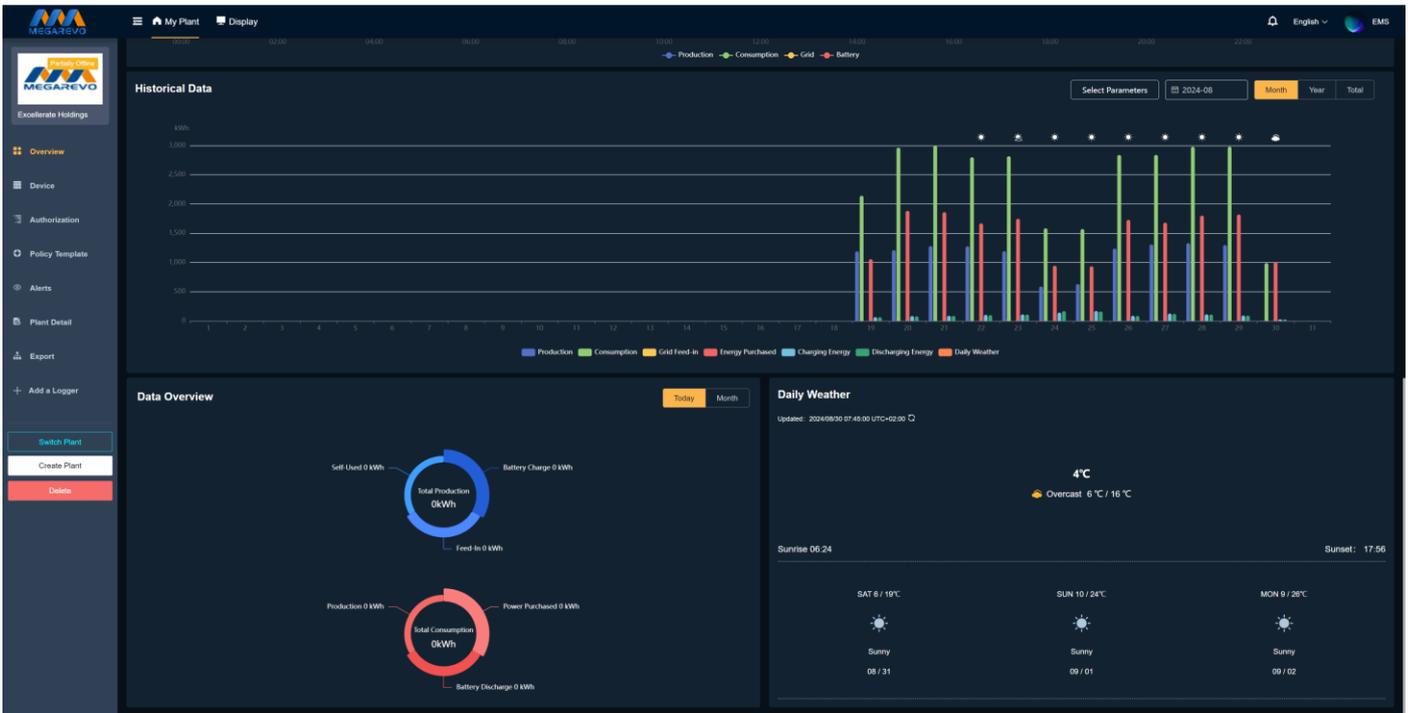
When a power station is no longer in use, it can be deleted, along with any devices bound to it. Once the deletion is performed, it cannot be undone. If you need to recover the power station data, please contact customer service.



### 3.9 Power Station Data

After successfully creating a power station and binding a collector, the "Power Station Data" section allows you to view the current power station's statistical data, including statistics (cumulative power generation, cumulative grid-connected power, operating days, cumulative revenue, total CO<sub>2</sub> emissions reduction), flow charts, 24-hour curves, historical data statistical charts, recent data analysis, and current weather conditions.





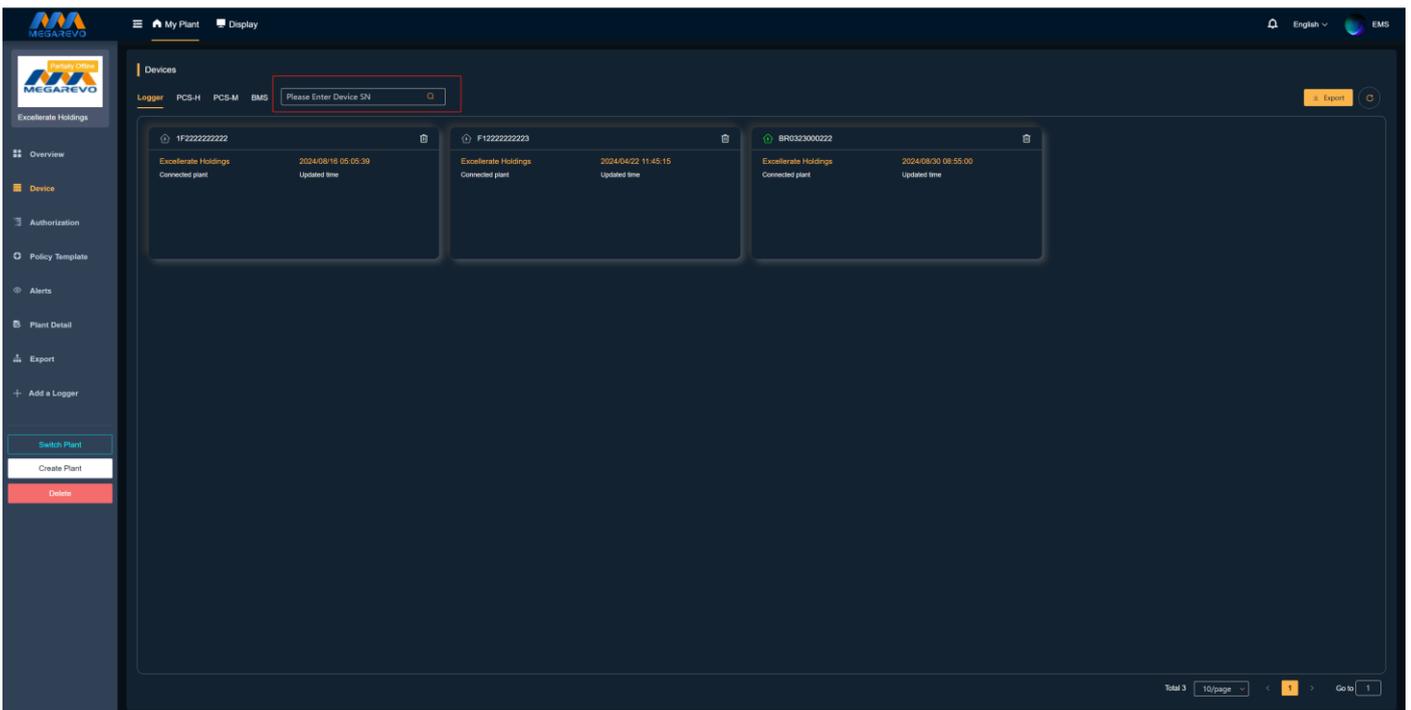
### 3.10 Device Information

The Device Information section provides visibility into the information and data of the devices currently bound to the power station.

The device list displays the following content: device name, device SN code, network status, alarm status, affiliated power station, and update time.

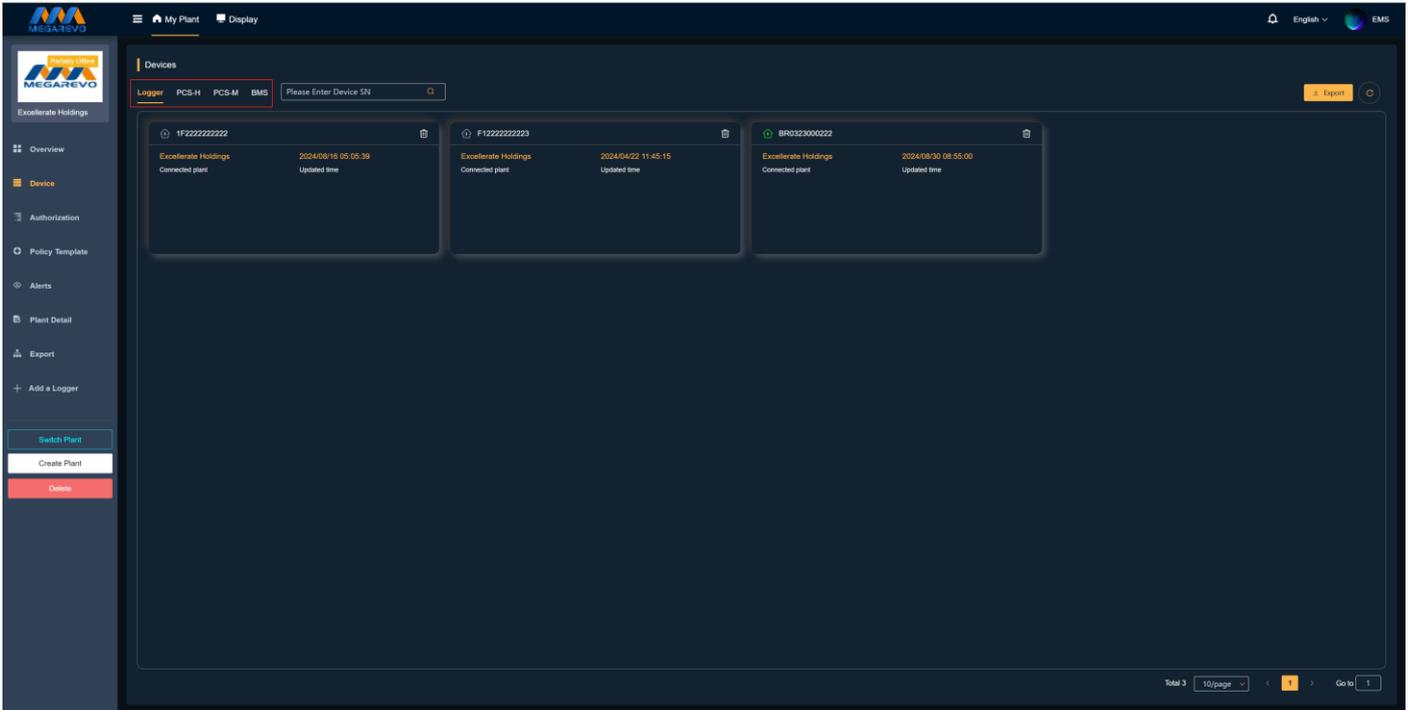
#### 1) Device Search Function

When you need to quickly locate a specific device, enter the device SN code, and the page will provide the most relevant results for your search.



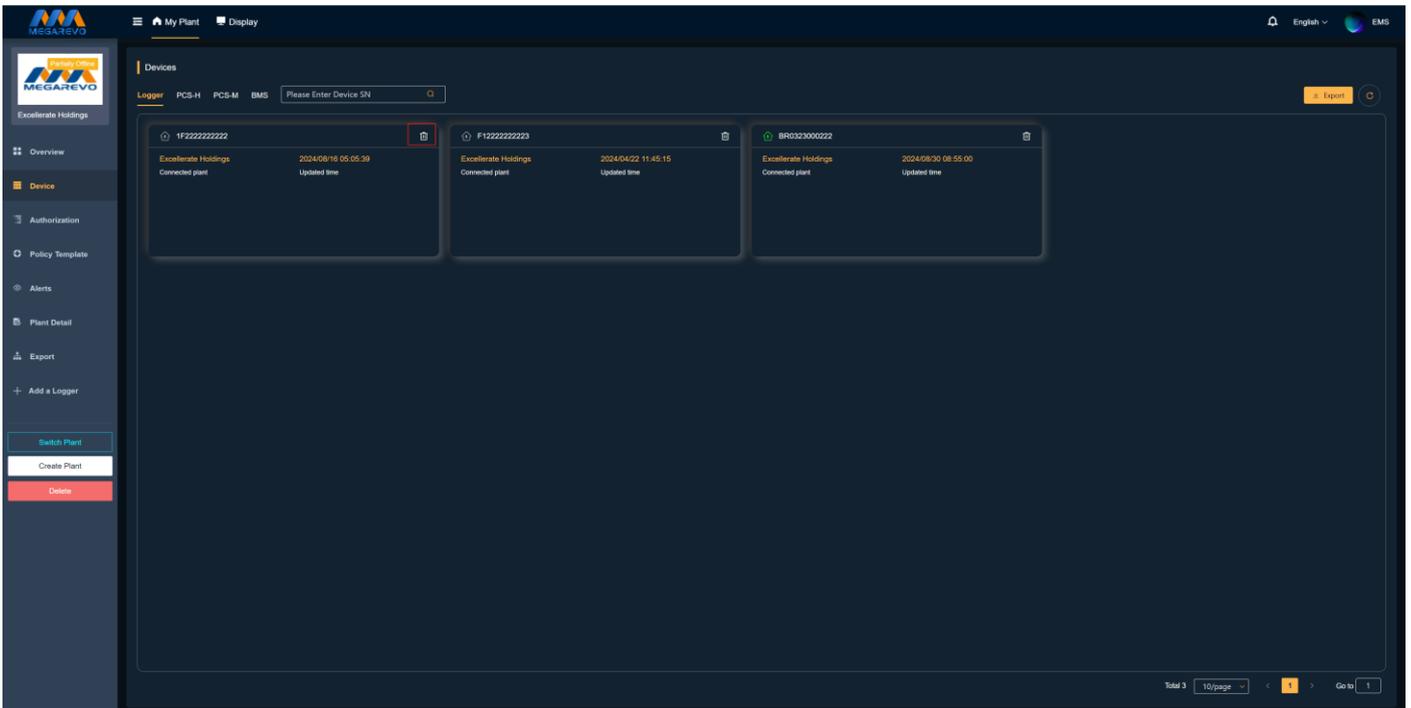
## 2) Device Type Classification

We display the types of devices currently bound to the power station at the top of the section.



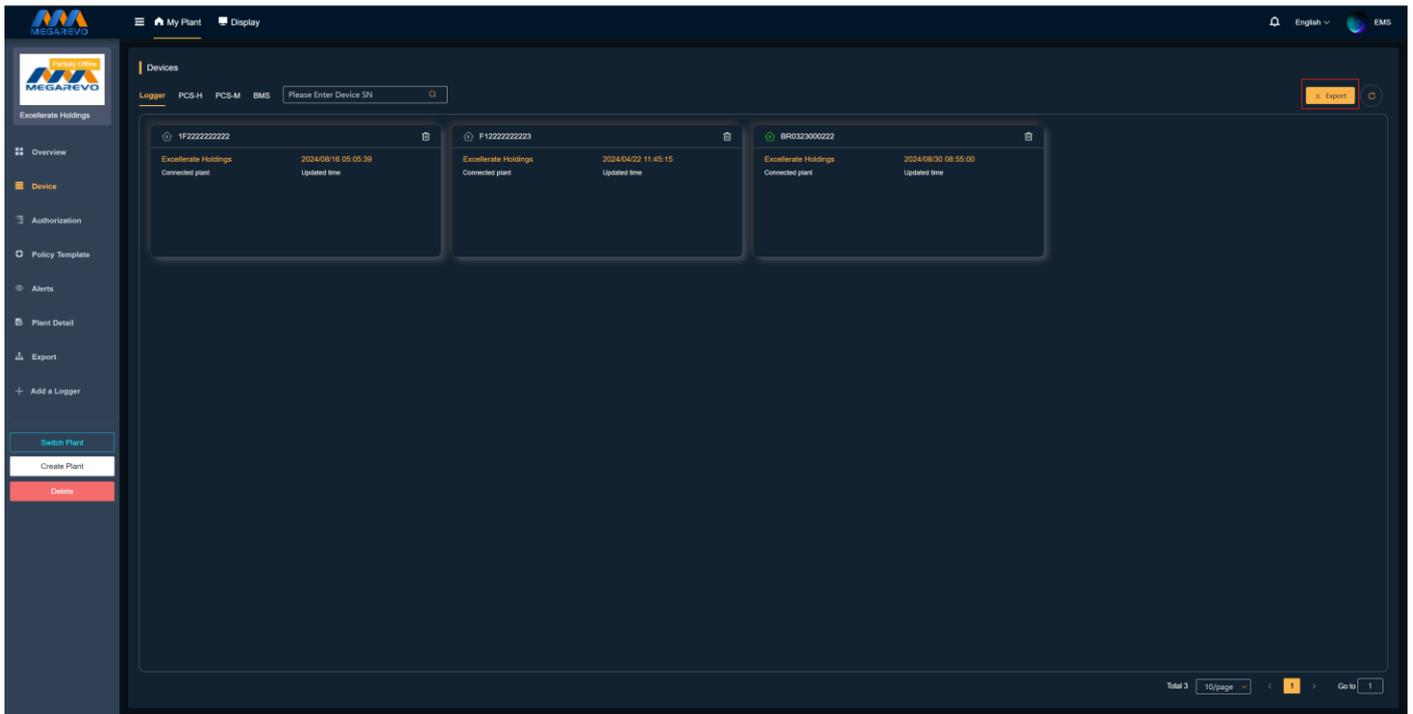
## 3) Device Unbinding Function

When a device is no longer in use in the current power station, its binding relationship with the power station can be unbound. After successful unbinding, the device can be rebound without data loss.

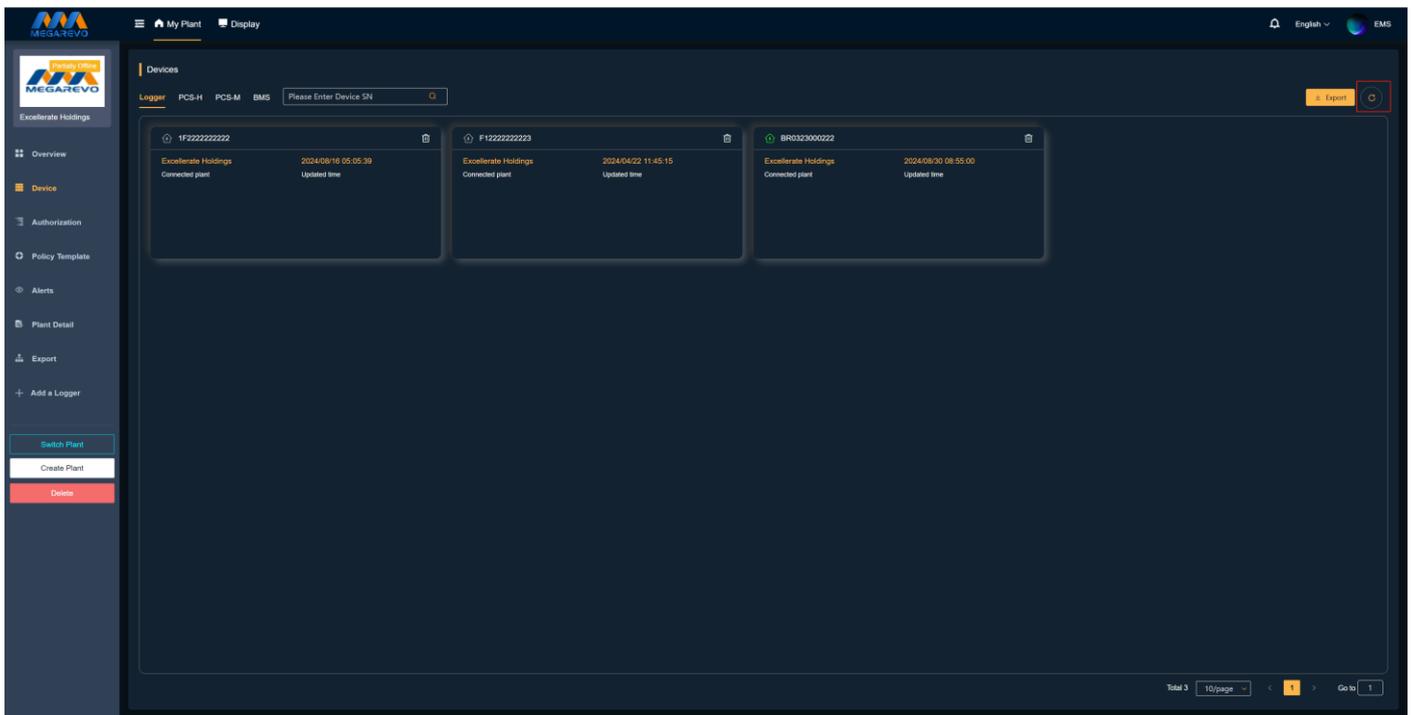


#### 4) Data Export Function

Export some important data from the currently filtered and displayed device list. The exported data content is consistent with what is displayed in the list.



#### 5) Page Refresh Function



## 6) Device Details Page

Clicking on the device SN will take you to the device details page, which is divided into four sections: data details, alarm information, parameter information, and operation strategy.

### a. Data Details

The data details section displays the device's historical power generation data, basic information, and real-time data. The historical power generation data section plots the system's daily, weekly, monthly, yearly, and total data into charts. You can select the desired data and time period to display and export it through parameter selection and time range selection.

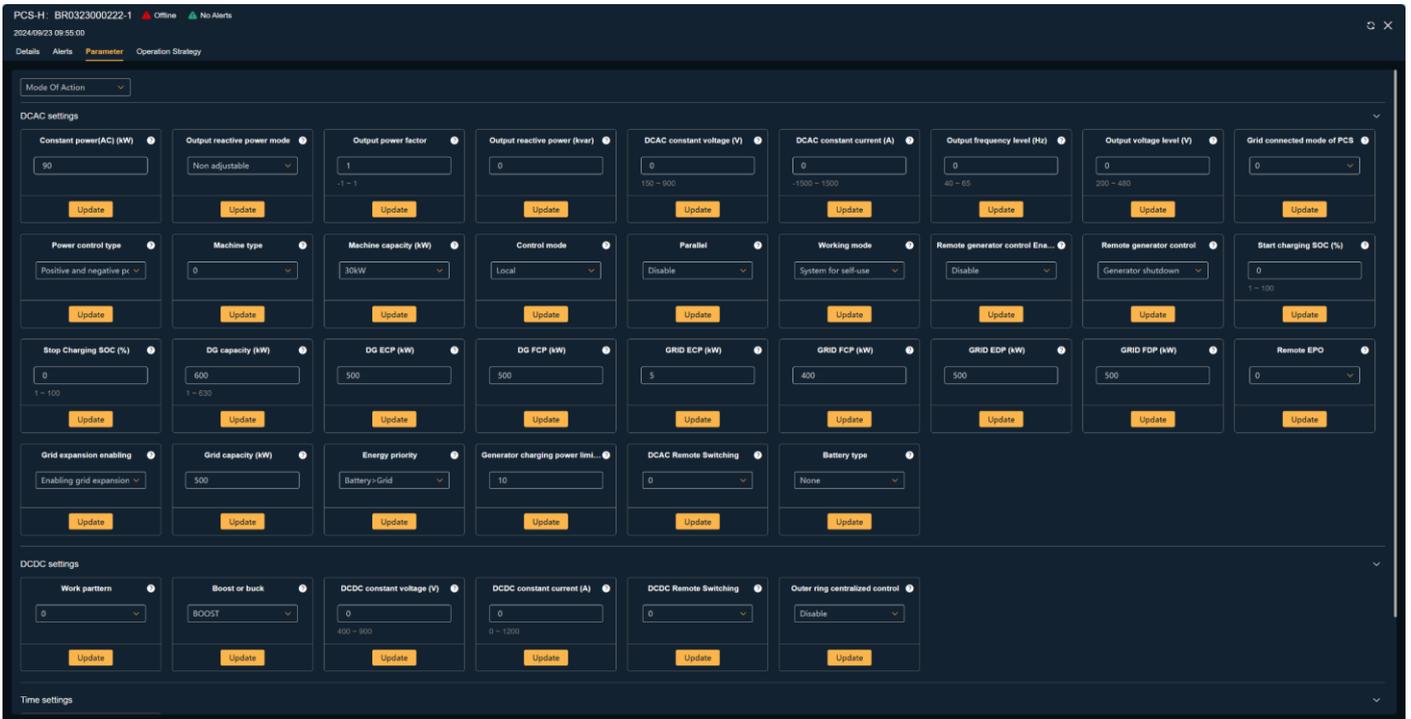


### b. Alarm Information

The alarm list for a single device, with functionality similar to that of the alarm module.

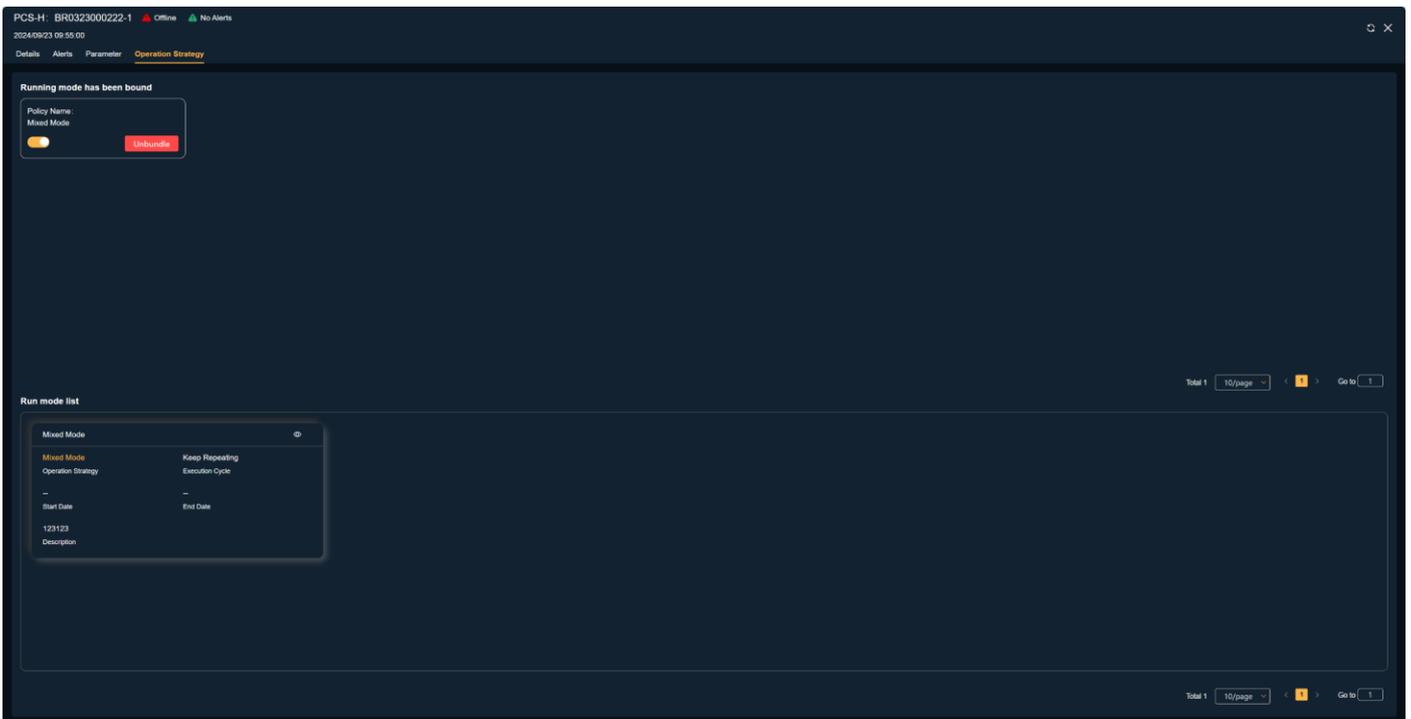
### c. Parameter Information

The parameter information section displays the device's parameter settings and allows for the issuance of instructions to modify parameters. Only parameters authorized by the agent end can be displayed and instructions can be issued for them.



### d. Operation Strategy

The operation strategy section displays the operation modes already bound to the device and a list of created operation modes. The rules for binding operation modes are: only one type of strategy can be bound, and only one backup power mode and steady-state expansion mode can be bound.

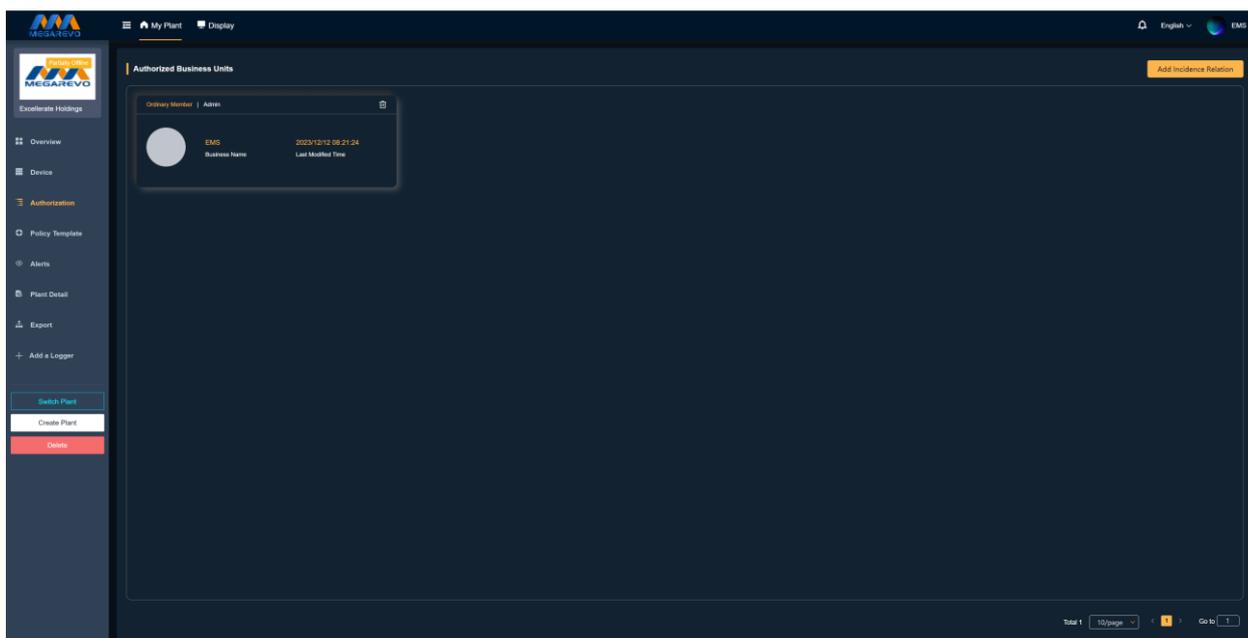


## 3.11 Authorization Information

The Authorization Information section displays the authorized agents and installers for the current power station, supporting operations such as adding authorizations, revoking authorizations, and switching roles.

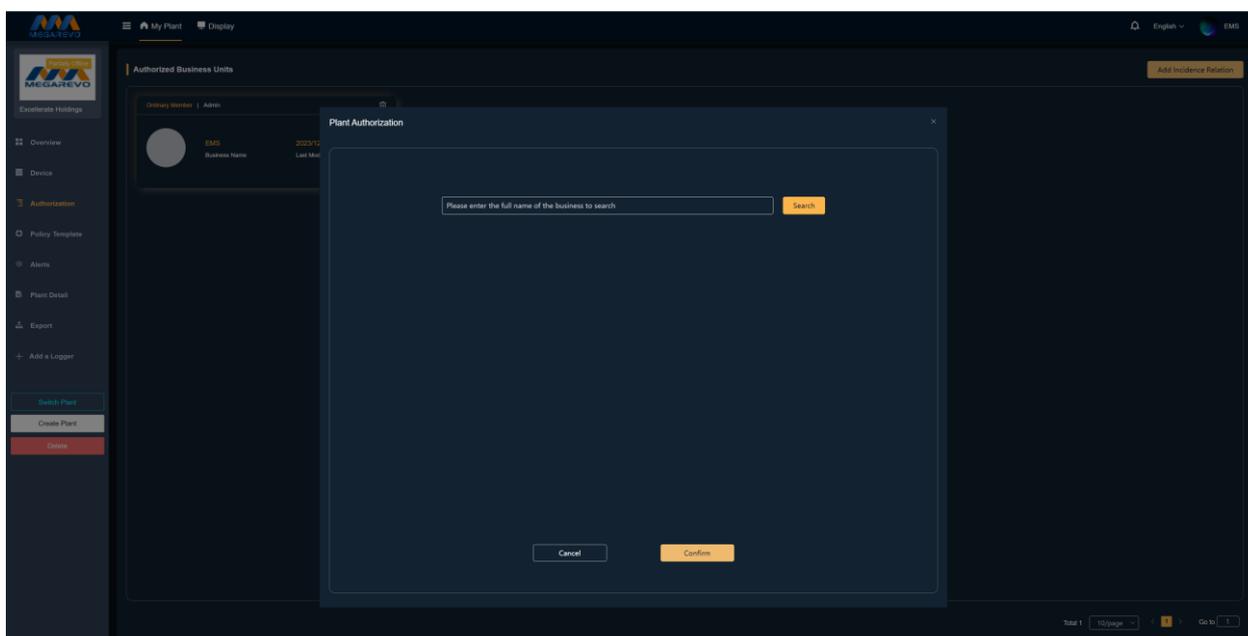
The authorization information list displays the following content: company logo, company name, authorization details, and authorization time.

Authorization roles include: Regular Member and Administrator. Regular Members can view the power station's power generation data, detailed information, alarm information, and device information, but cannot edit or configure the power station. Administrators, in addition to having all the capabilities of Regular Members, can configure and operate the power station and devices, but cannot delete the power station.



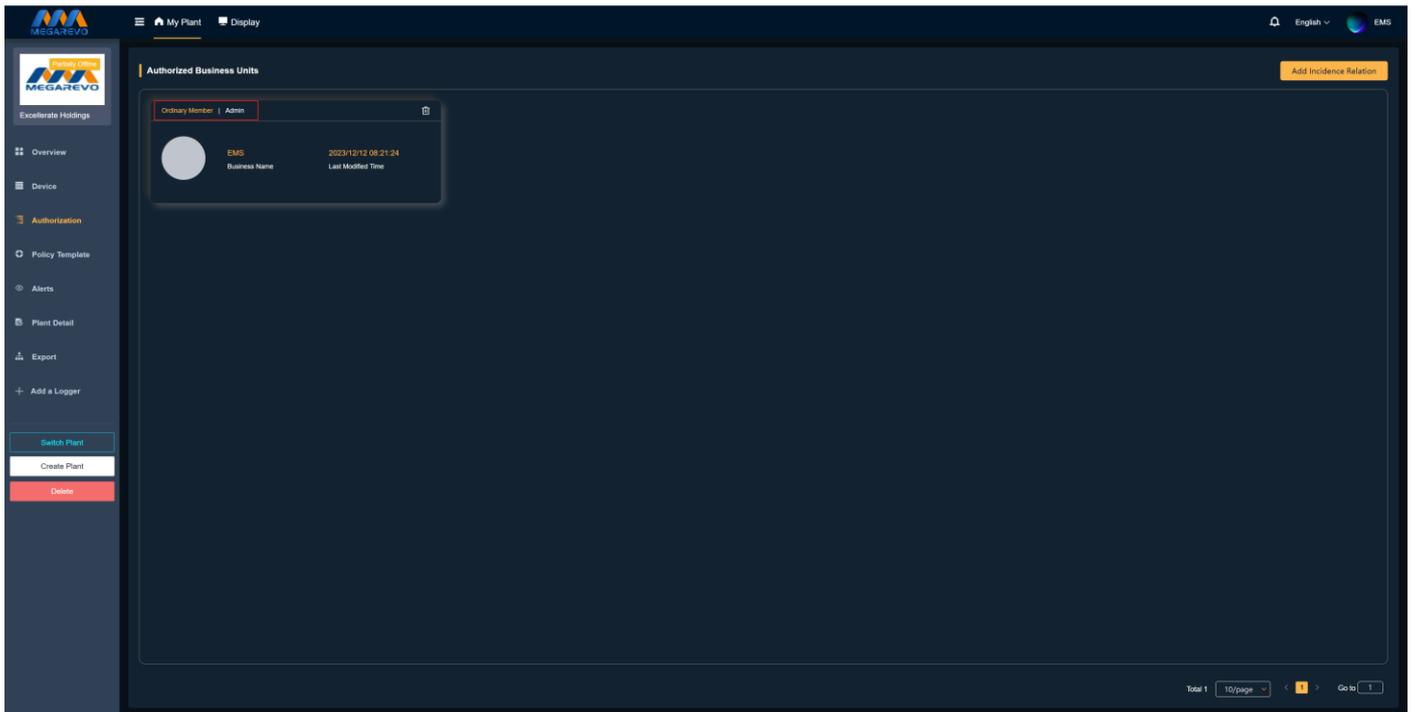
### 1) Add Authorization Function

When collaborative management is required for the current power station, click "Add Authorization" to enter the power station authorization page. Search for the full name of the agent or installer you wish to authorize and select the authorization role (Regular Member, Administrator).



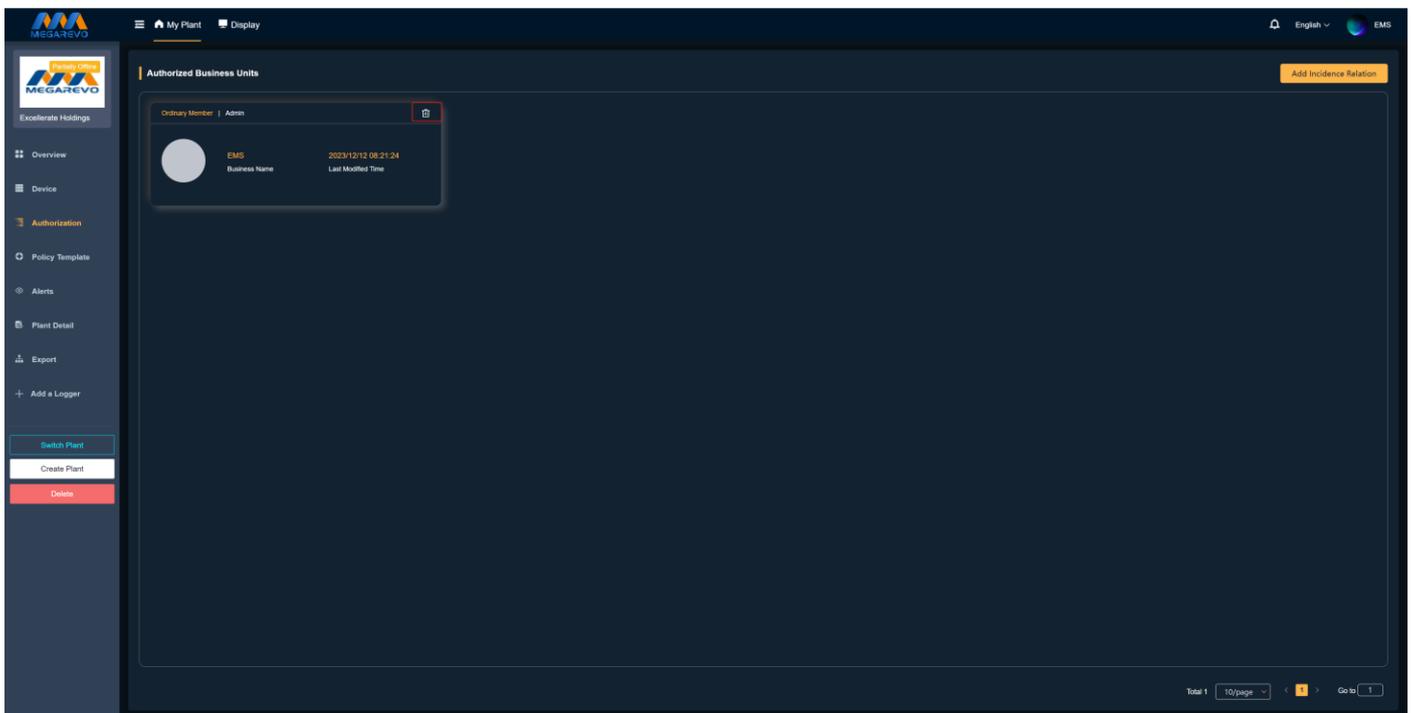
## 2) Switch Role Function

When the collaborative management method between the current power station and agents or installers needs to be adjusted, the authorization permissions can be adjusted through the switch role function.



## 3) Revoke Authorization Function

When the current power station needs to revoke the authorization of an agent or installer, it can do so through the revoke authorization function.



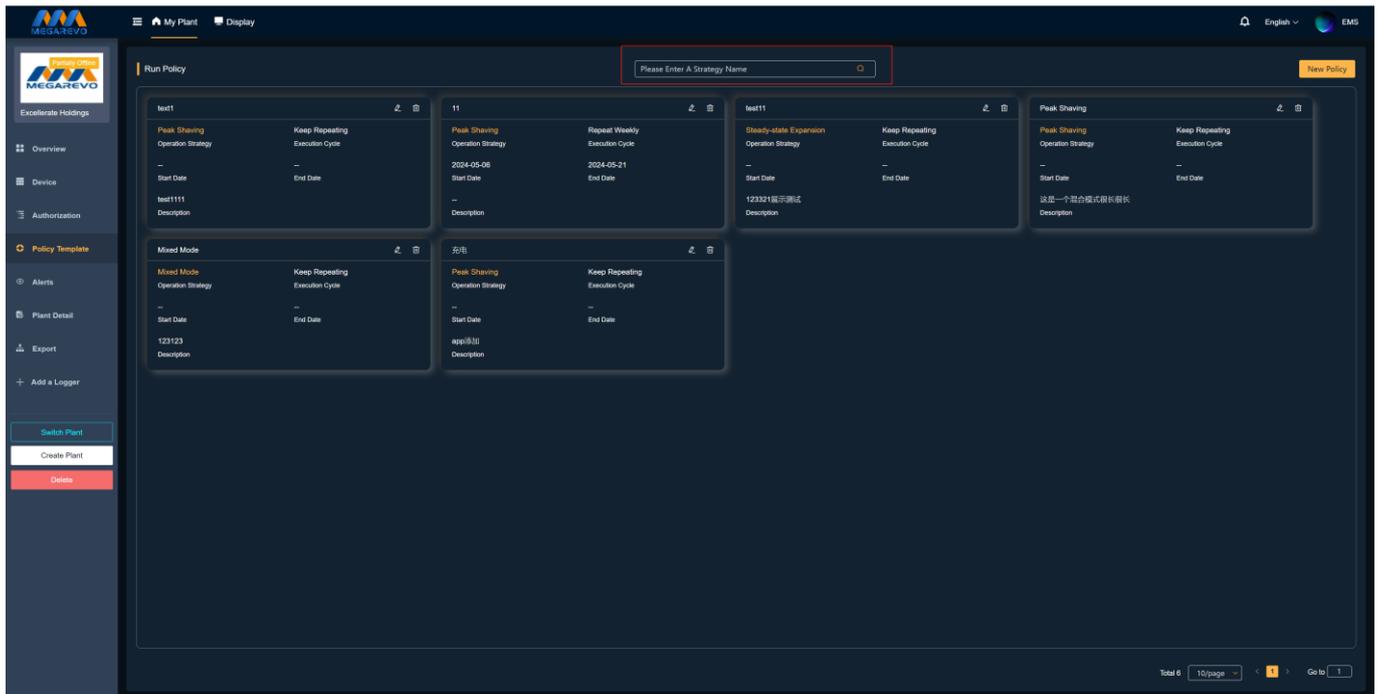
## 3.12 Strategy Templates

The strategy templates feature supports configuring device operation strategies, allowing users to customize various operation modes based on actual needs to achieve optimal power station performance.

The operation strategy list displays the following content: strategy name, execution cycle, start date, end date, template description, and operation strategy.

### 1) Strategy Search Function

When you need to quickly find the required operation strategy, enter the strategy name, and the page will provide the most relevant results for your search.



### 2) Create New Strategy Function

Click "Create New Strategy" to enter the new strategy page. Fill in the strategy name, template description (optional), select the execution cycle, start date, end date, strategy template, and configure the operation strategy.

Execution Cycle Options: Repeat Daily, Repeat Weekly, Long-term

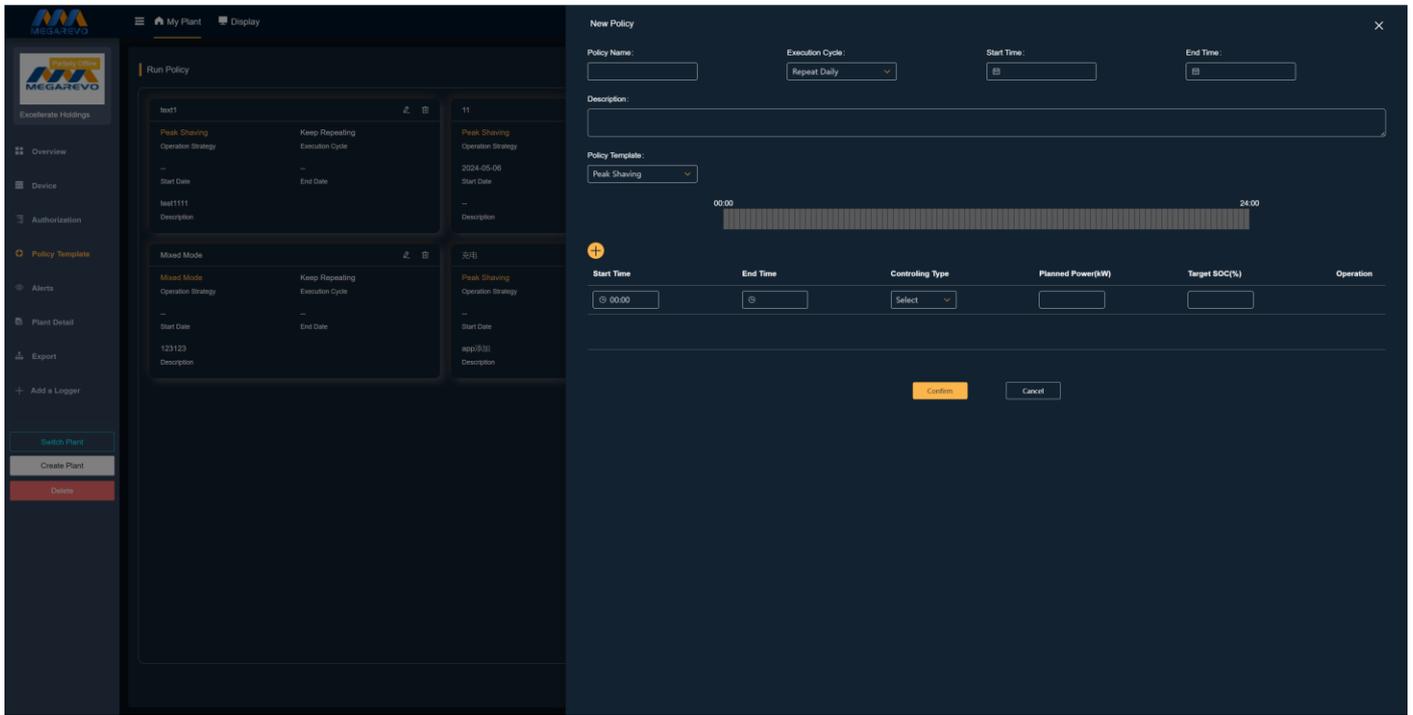
Strategy Template Options: Peak Shaving & Load Leveling, Backup Power Mode, Steady-state Capacity Expansion, Hybrid Mode

Peak Shaving & Load Leveling Configuration: Start Time, End Time, Control Type (Standby, Charging, Discharging), Scheduled Power, Target SOC

Backup Power Mode Configuration: Start Charging SOC, Stop Charging SOC, Start Charging Cell Voltage, Stop Charging Cell Voltage, Start Charging Total Voltage, Stop Charging Total Voltage, Charging Power

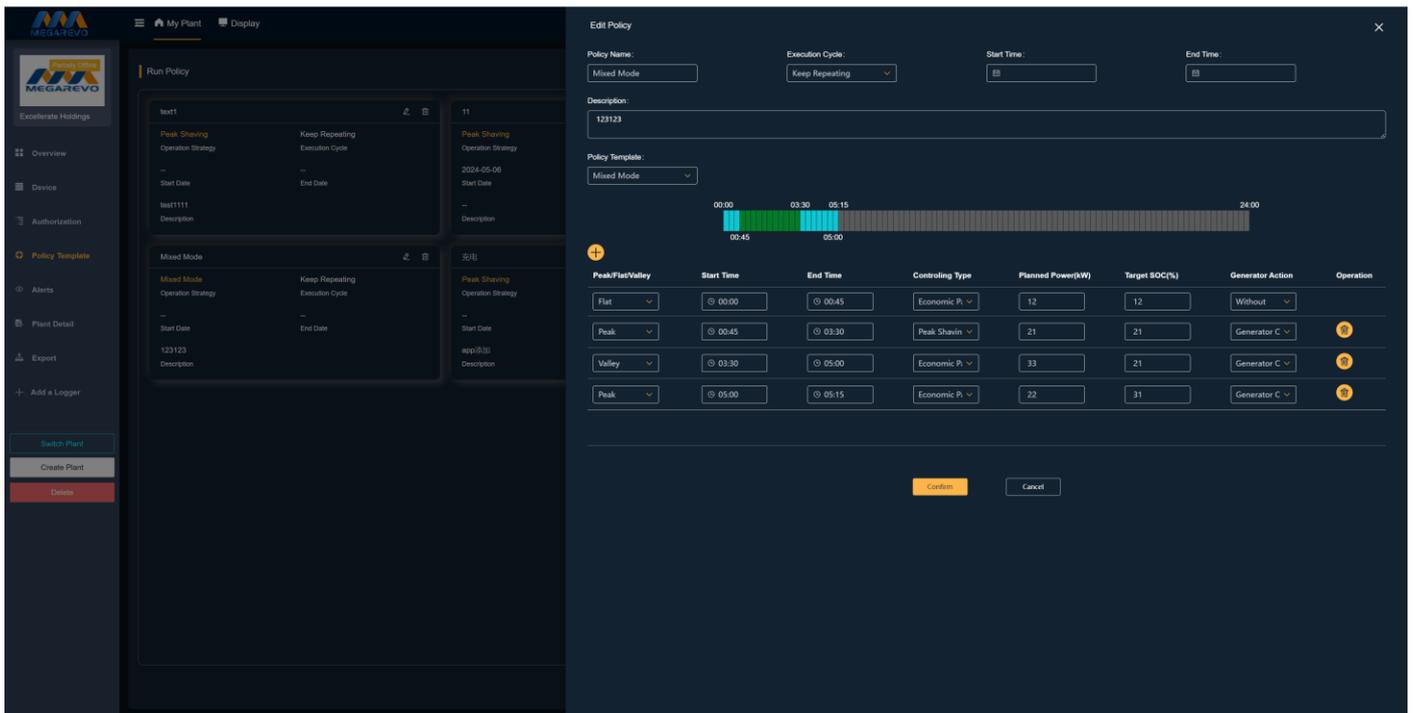
Steady-state Capacity Expansion Configuration: Grid Capacity, Start Charging SOC, Stop Charging SOC, End Discharging SOC

- Add 24-hour Operation Strategy (only available for Peak Shaving & Load Leveling and Hybrid Mode)
- Delete 24-hour Operation Strategy (only available for Peak Shaving & Load Leveling and Hybrid Mode)



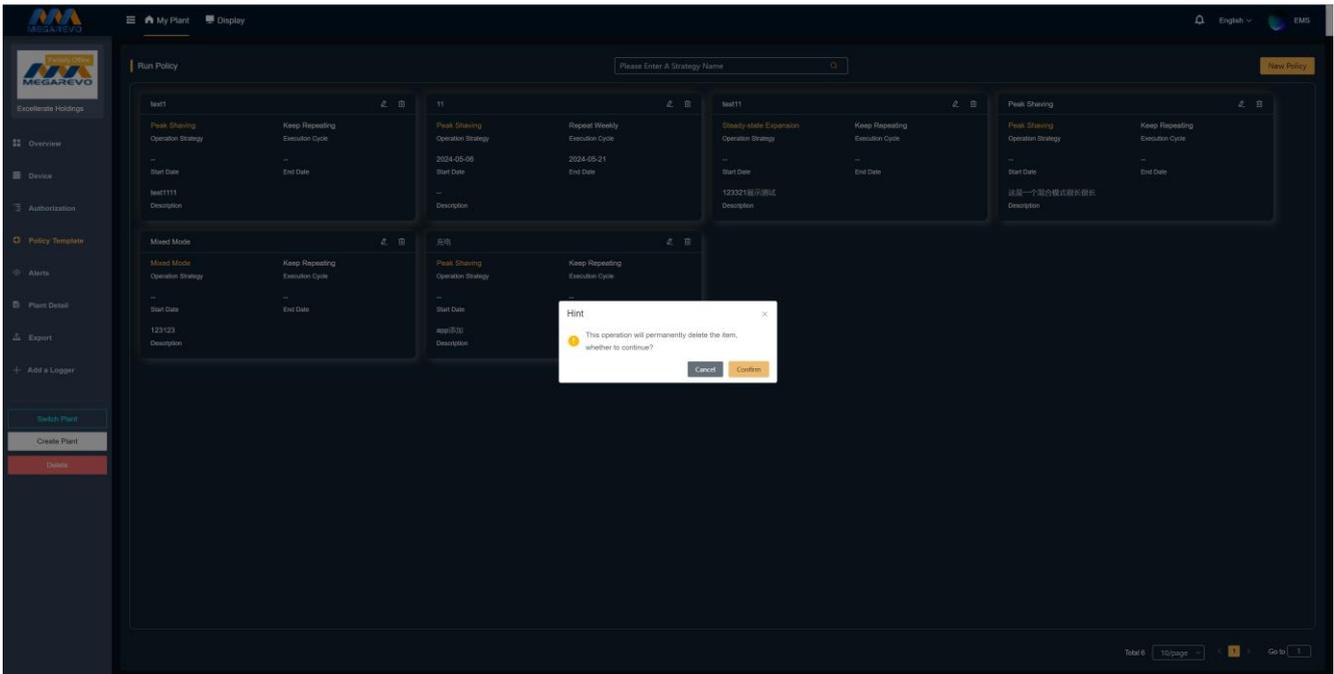
### 3) Edit Strategy Function

Edit a successfully created operation strategy.



#### 4) Delete Strategy Function

Delete a successfully created operation strategy. Note that once the deletion is performed, it cannot be undone.



### 3.13 Power Station Alerts

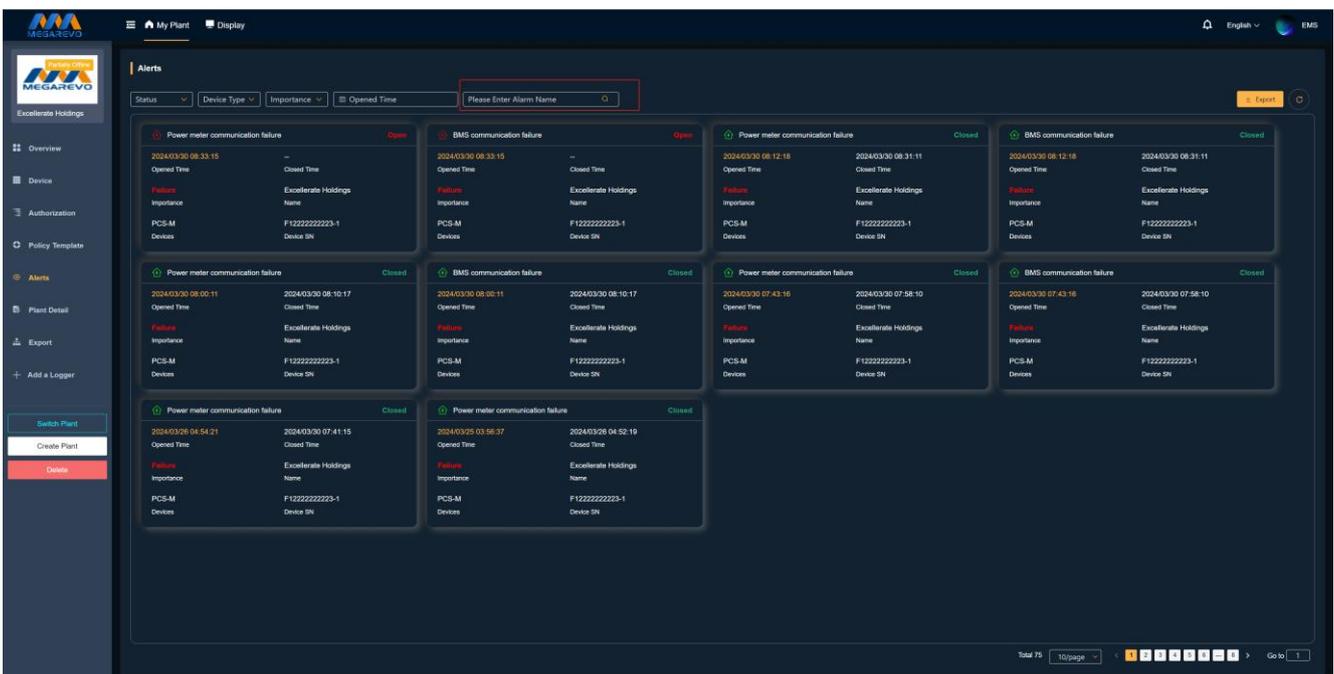
The alert module displays the alert information for all devices in the current power station.

The alert list displays the following content: alert name, alert start time, recovery time, alert status, level, power station name, and device.

#### 1) Alert Search Function

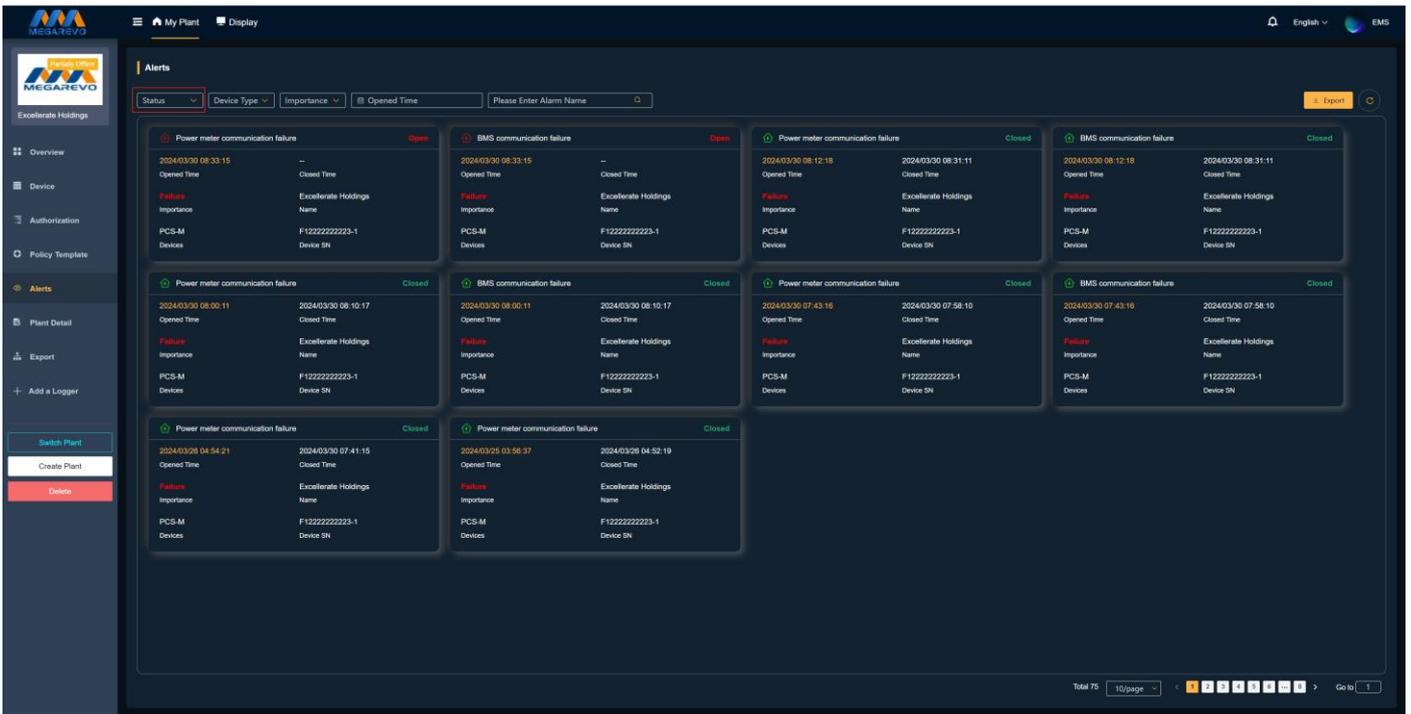
##### a. Alert Name Search

When you need to quickly find a specific alert, enter the alert name, and the page will provide the most relevant results for your search.



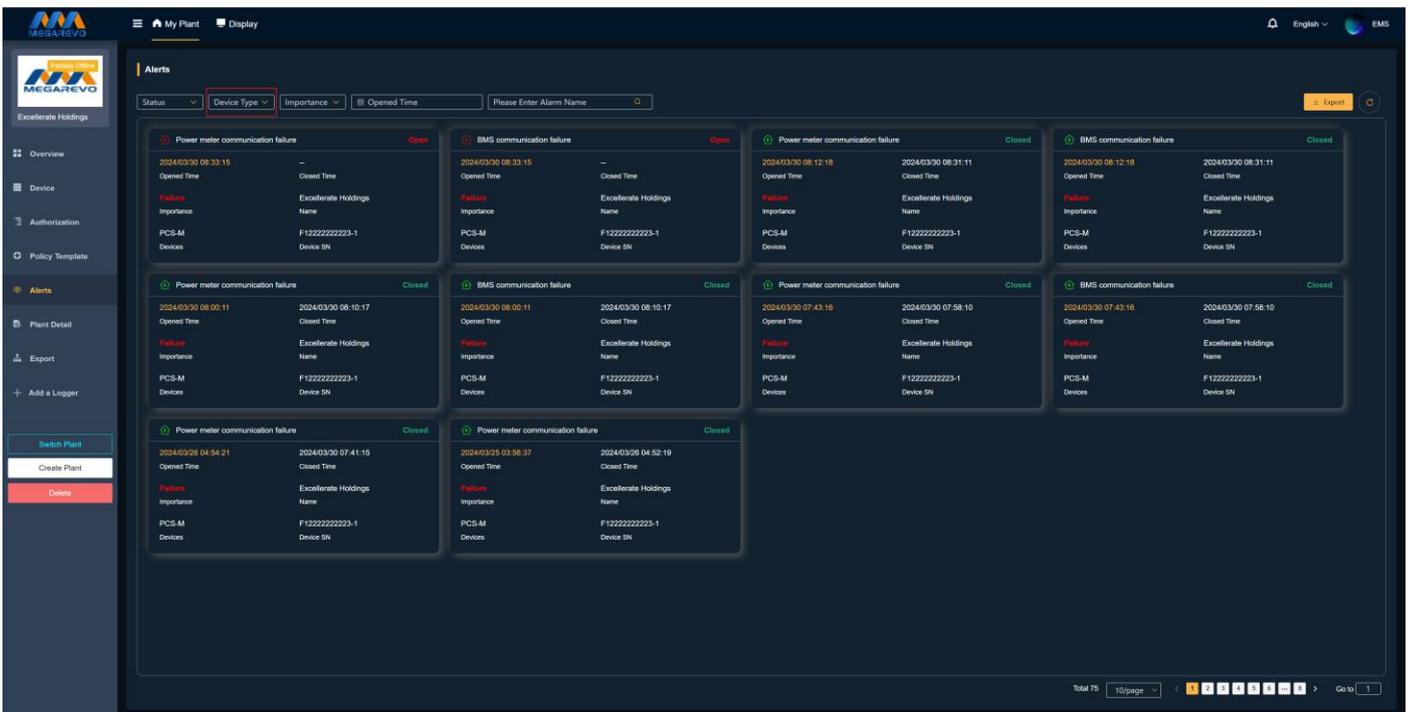
### b. Alert Status Filtering

Filter alerts based on whether they have been recovered after occurrence. Filtering conditions: All, In Progress, Recovered.



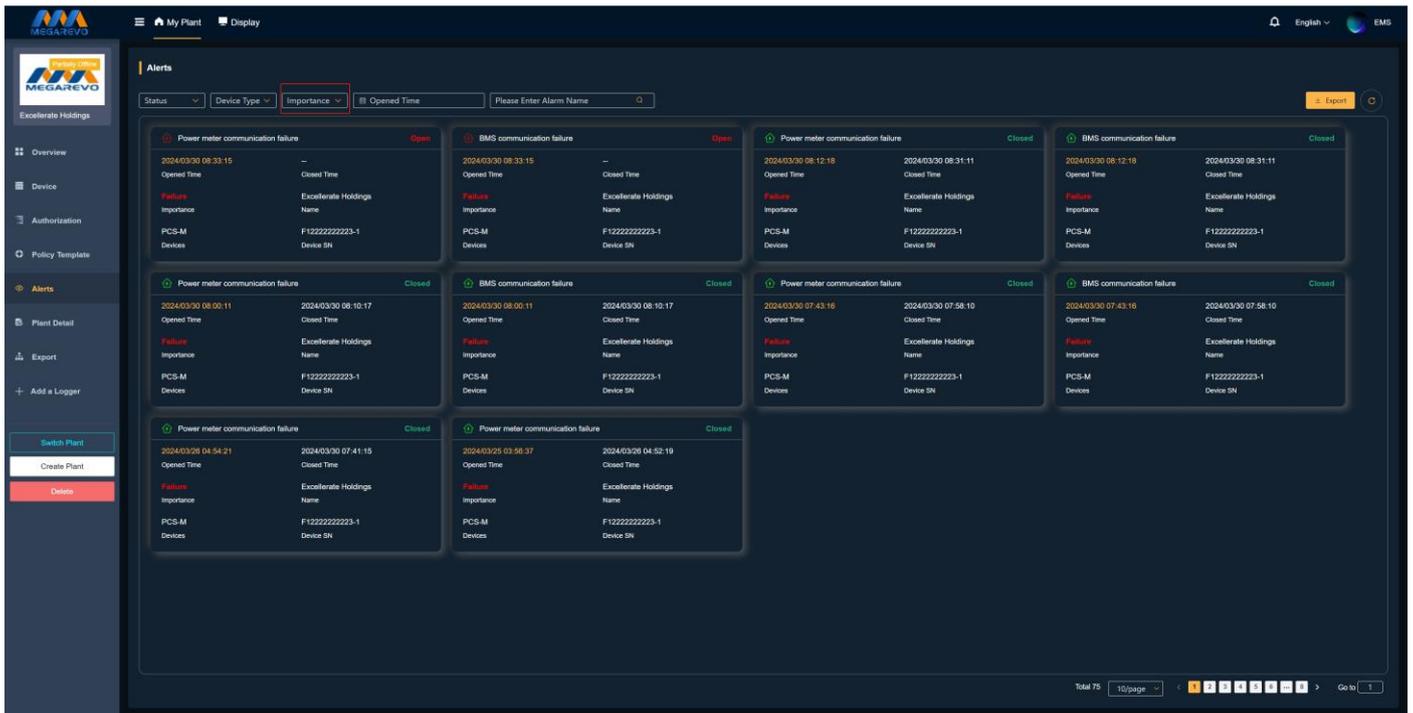
### c. Device Type Filtering

Filter alerts by the type of device on which they occurred.



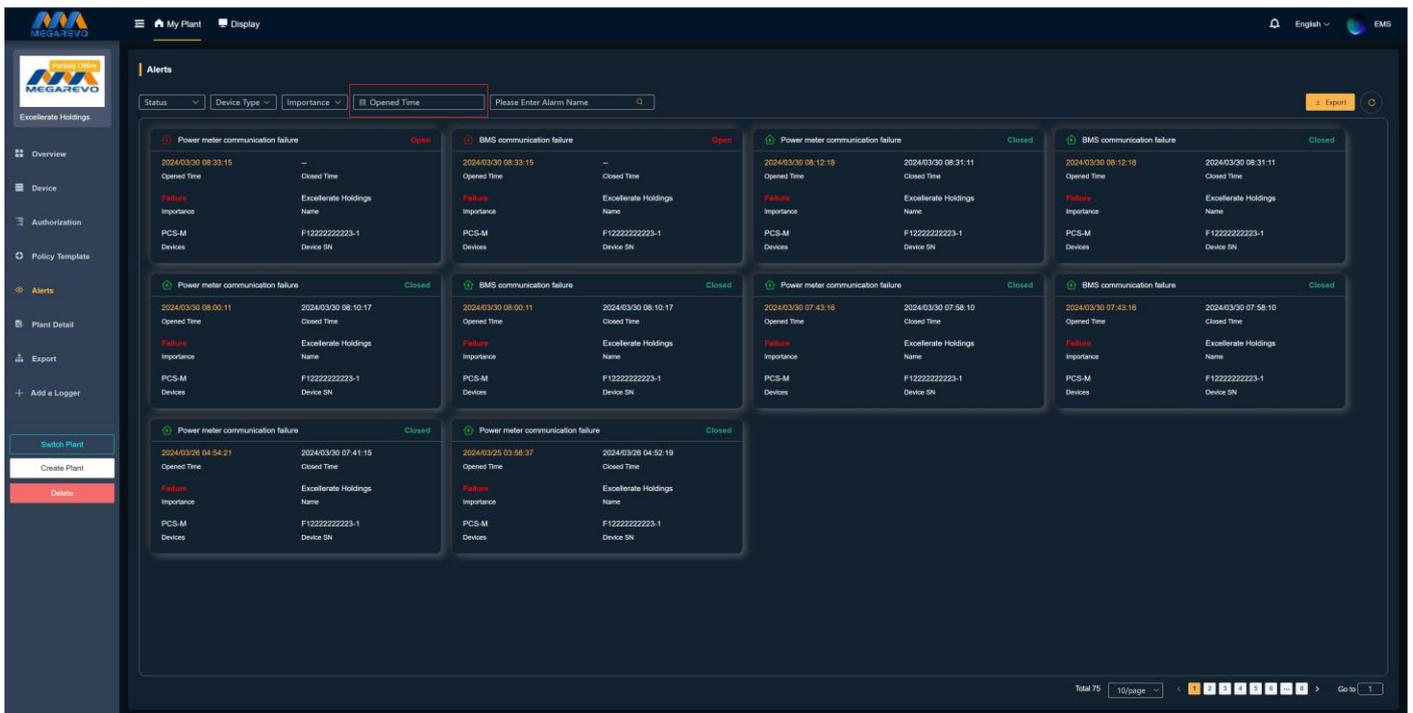
### d. Alert Level Filtering

Filter alerts based on their severity levels. Filtering conditions: All, Prompt, Alert, Fault.



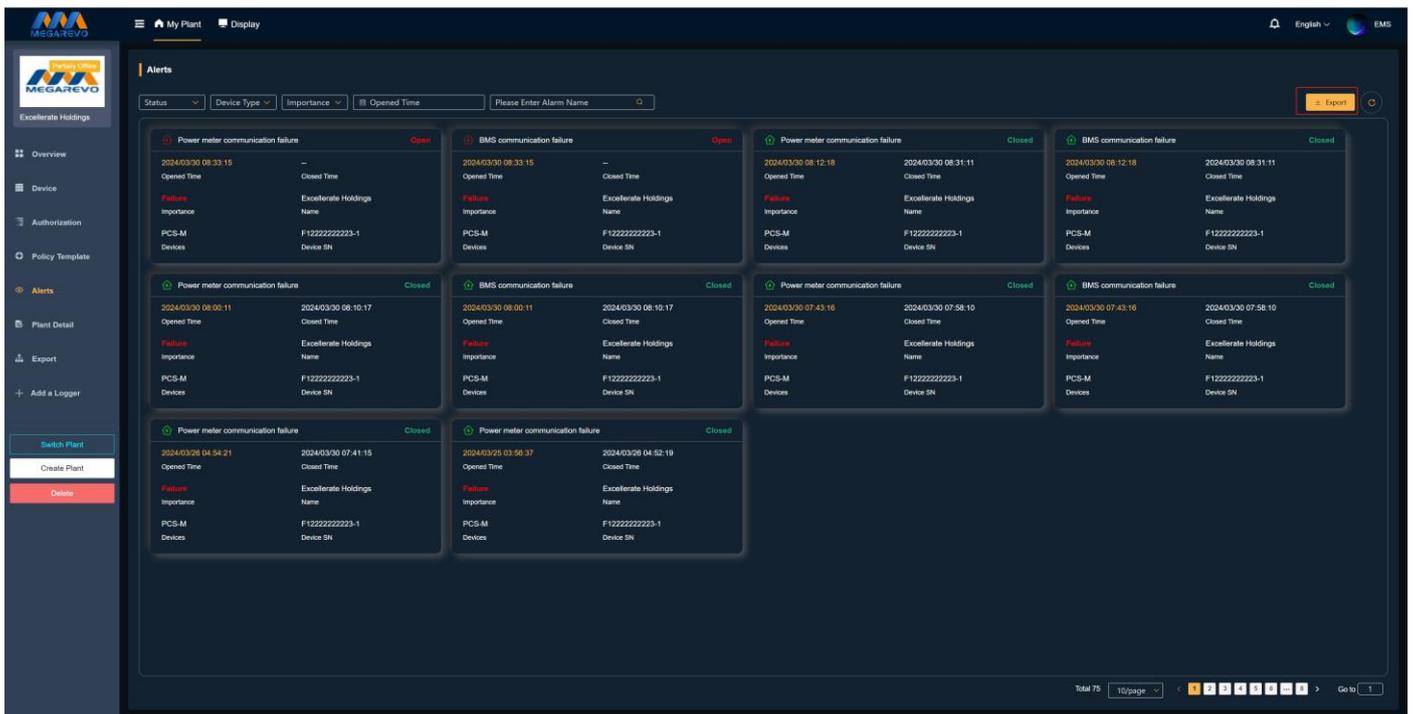
### e. Alert Time Filtering

Filter alerts by selecting the time of occurrence, allowing you to view alert data for the past week.

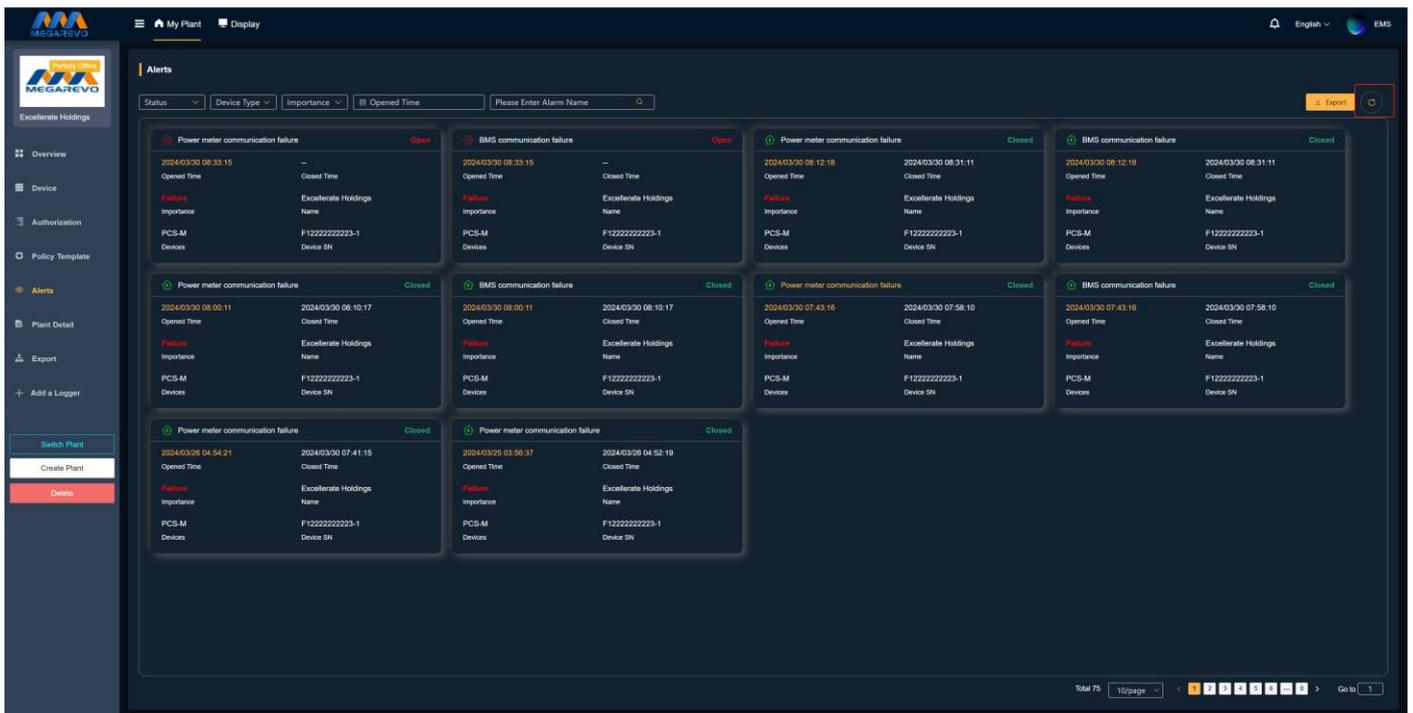


## 2) Data Export Function

Export some important data from the currently displayed device list that matches the current filters. The exported data content is consistent with what is displayed in the list.

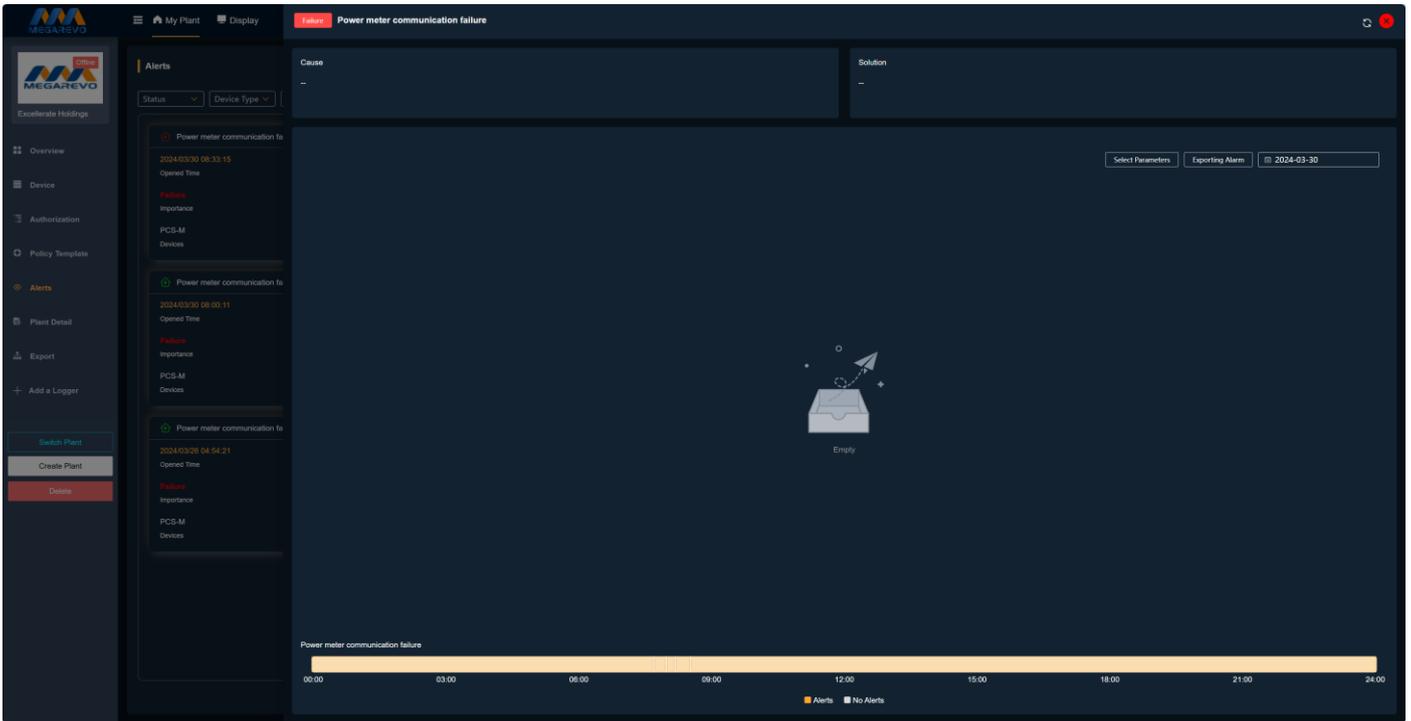


## 3) Page Refresh Function



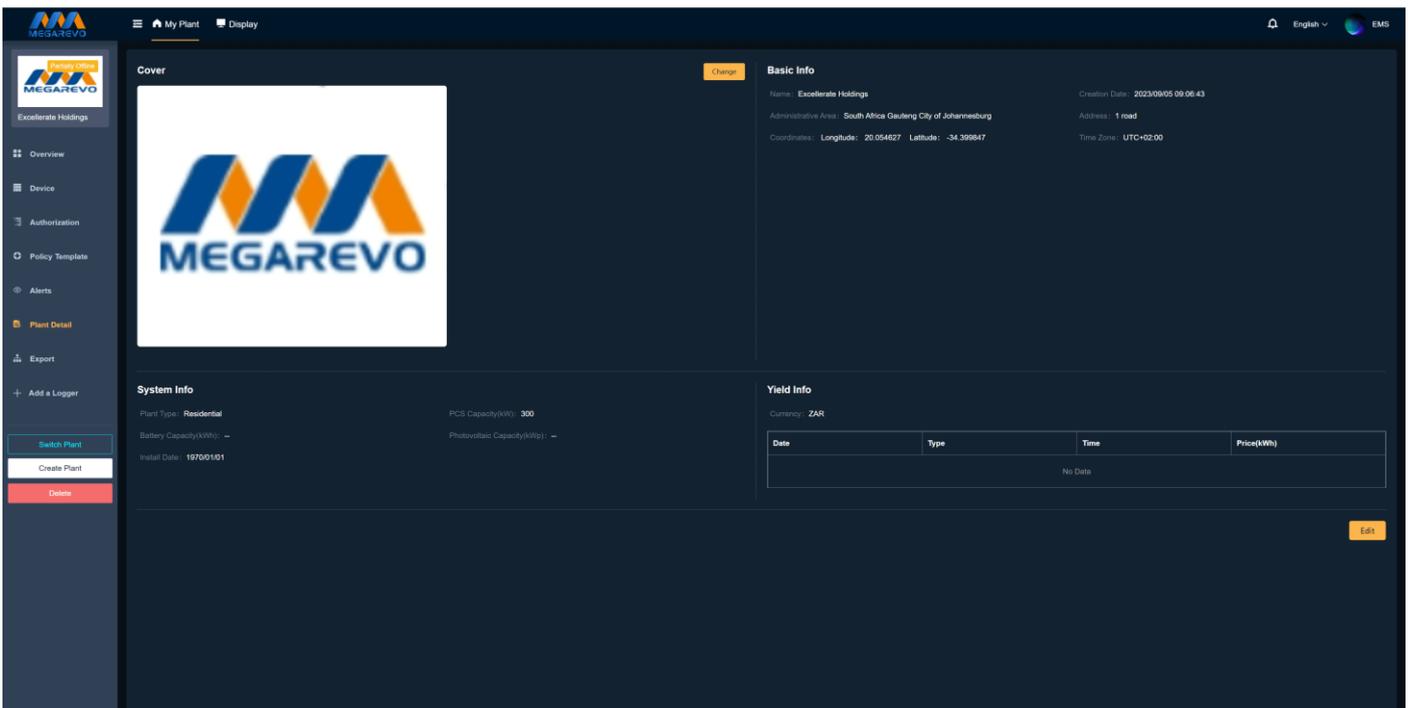
#### 4) Alert Details Page

Clicking on the alert name brings you to the alert details page, which displays the current alert's resolution solution and the device's data during the alert period. The data is presented in charts, and you can select the parameters and time range to display the desired data and export it.

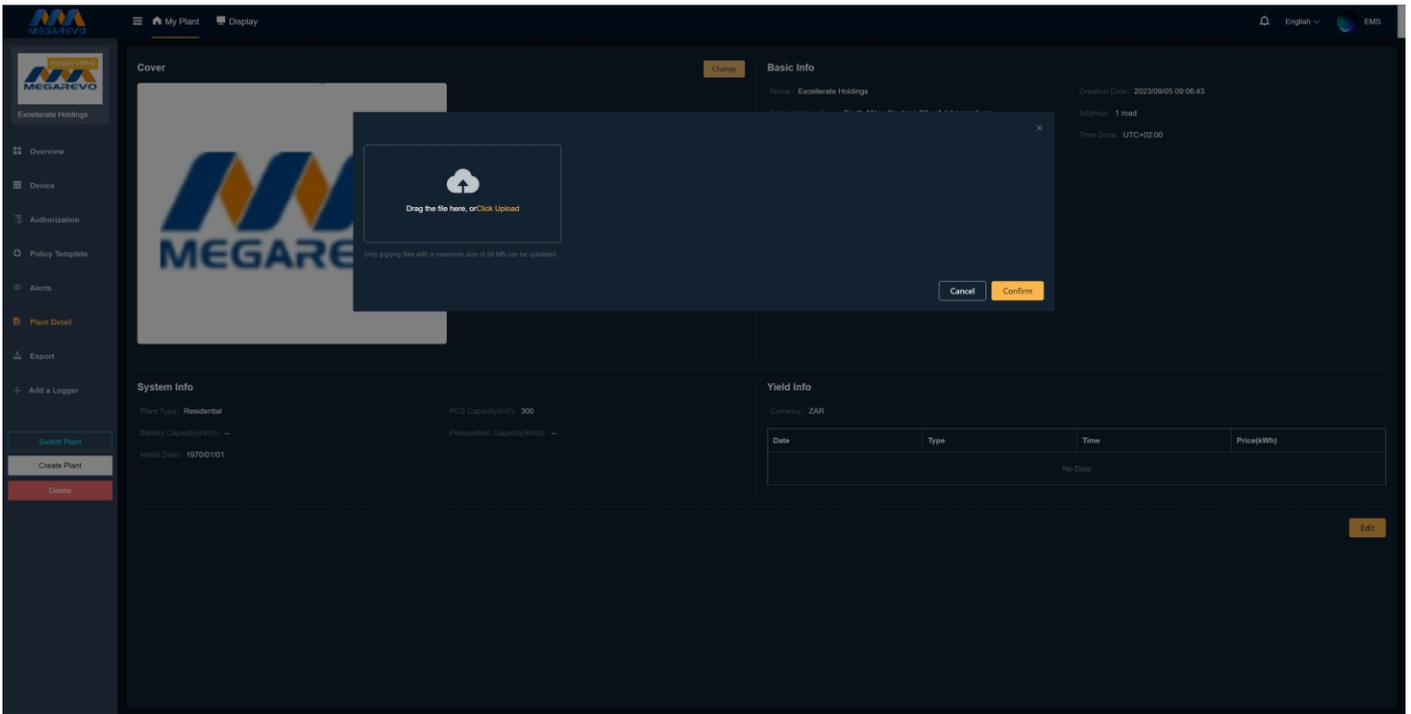


### 3.14 Power Station Information

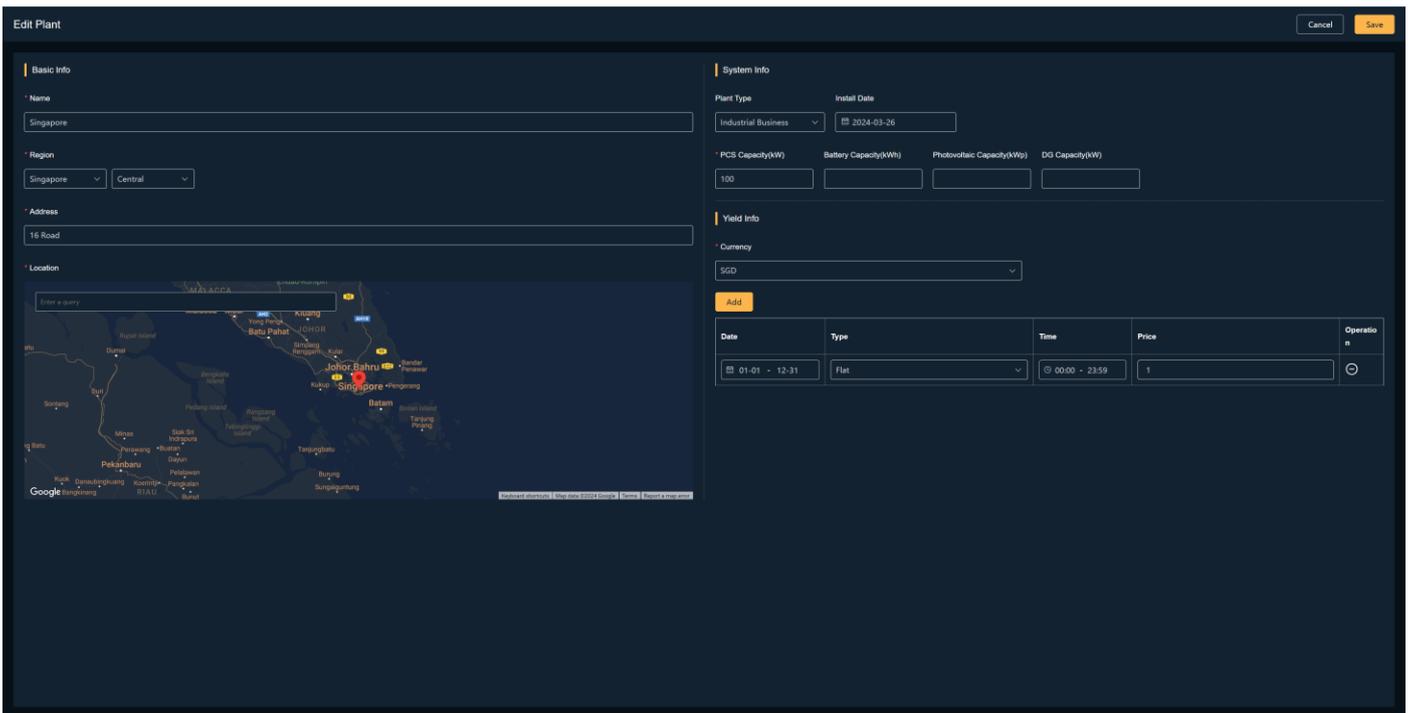
The Power Station Information section displays the current power station's cover image, basic information, system information, and revenue information filled in when the power station was created. This allows users to quickly understand the current power station's information and supports functions to change the power station's cover image and edit power station information.



## 1) Change Power Station Cover Image



## 2) Edit Power Station Information

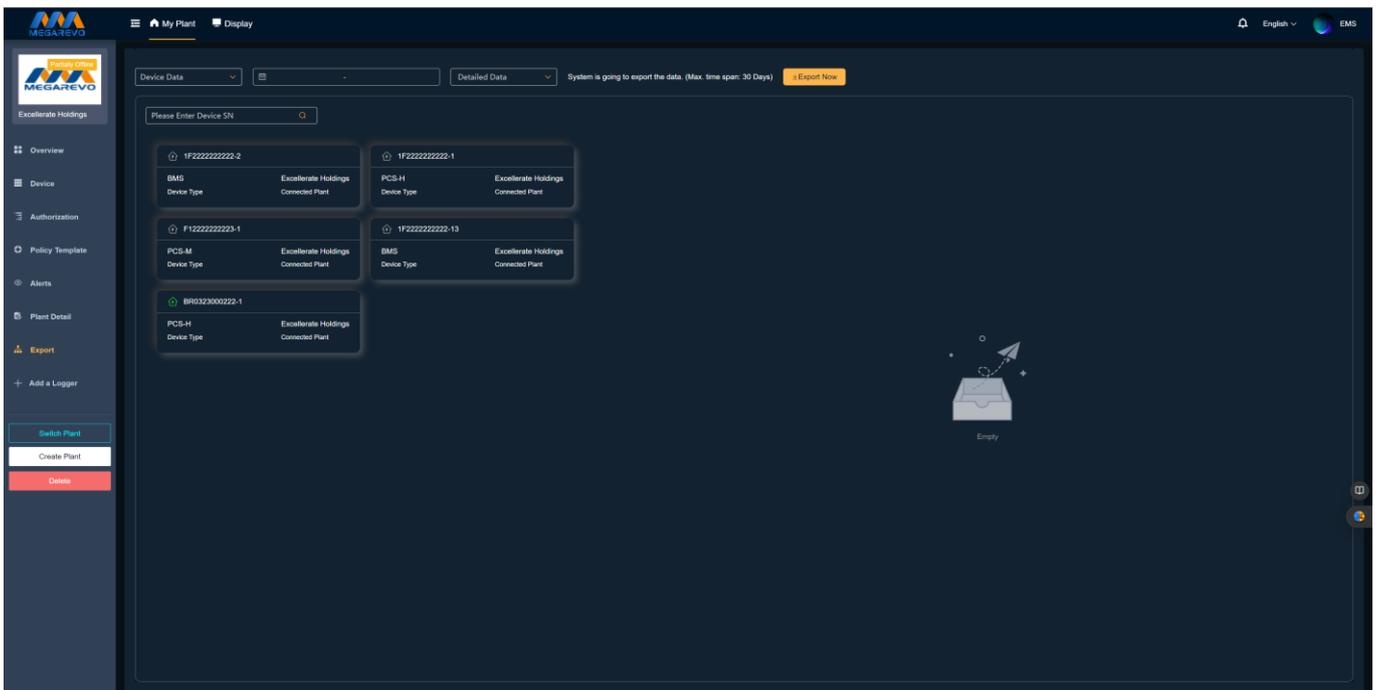
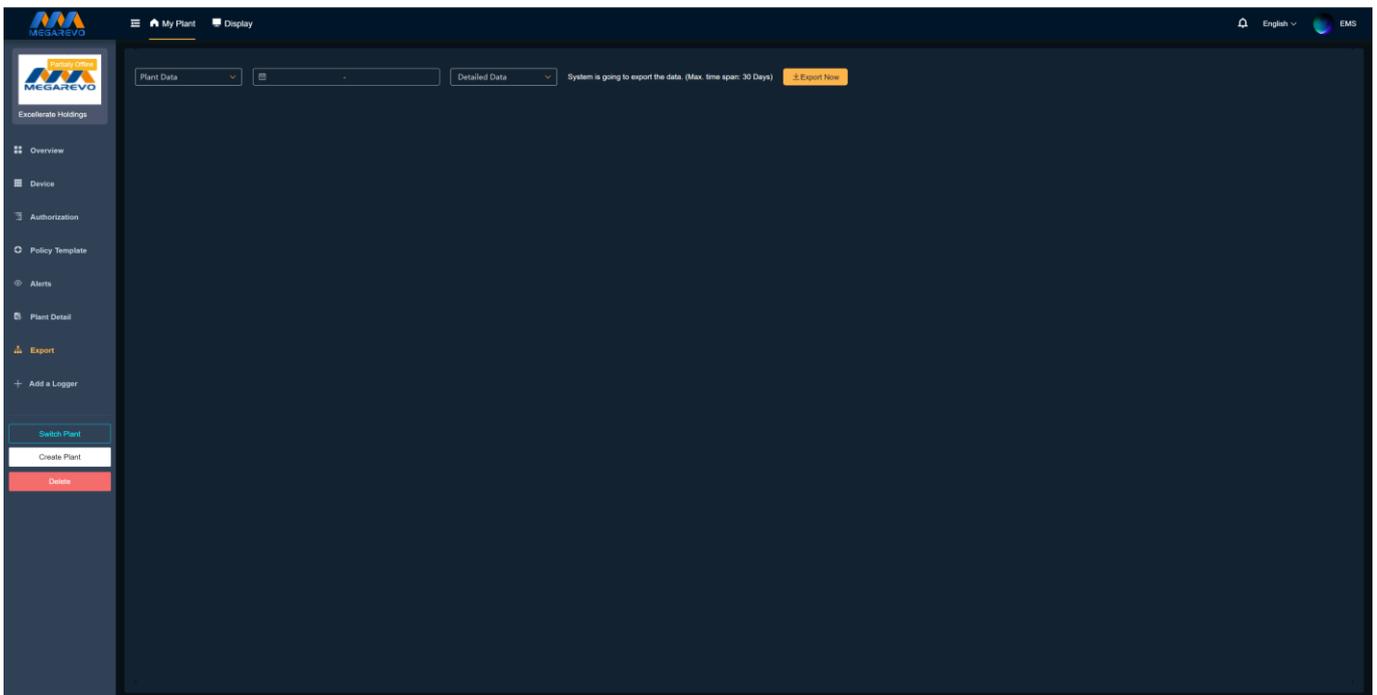


## 3.15 Data Export

The Data Export module is used to compile statistics on the basic parameters and power generation of power stations and devices over a specific period in the past. It presents this information through data reports, which are a concrete representation of the business data of power stations and devices.

The types of data exported include power station data and device data, with options to select and export data on a per-item basis, daily statistics, monthly statistics, and annual statistics. Users can select specific time periods for report data, and when exporting device data, they can choose individual devices and export parameters. The maximum data export limits are: up to 30 days of data per item, up to one year of data for daily statistics, and up to ten years of data for monthly and annual statistics.

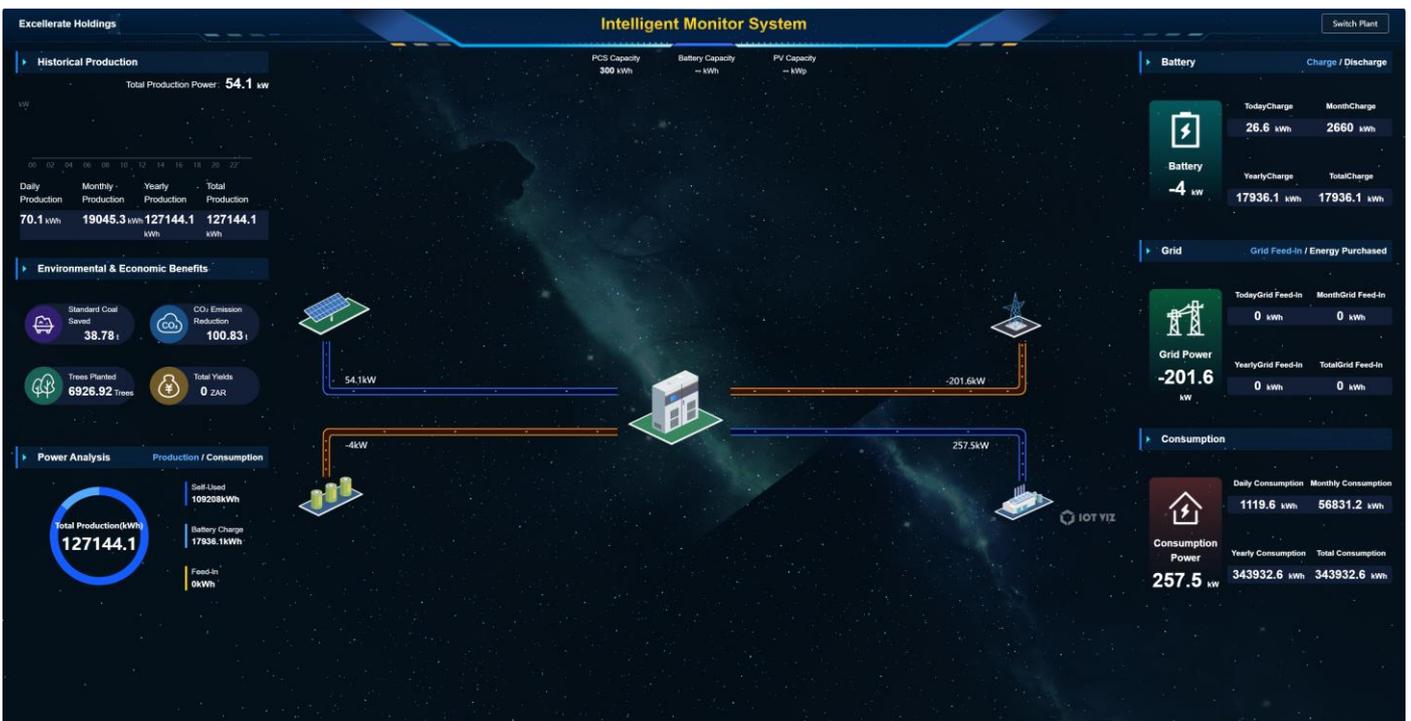
After selecting the content to be exported, click "Export Now" to download the Excel report to your browser.



### 3.16 Large Screen Display

The Large Screen Display feature is one of the core functions of the system. It provides a comprehensive, intuitive, and visual display of the current power station's historical data, real-time data, operating status, energy conservation and emission reduction, revenue, and other information. This feature helps users grasp the real-time operation of the system and achieve efficient monitoring and management.

Note: To ensure a better visual experience, it is recommended to use a device with an aspect ratio of 16:9 and a resolution of 1080P or higher to view the large screen.



### 1) Overall Power Generation History

The Overall Power Generation History section presents statistical data for the current power station, allowing users to understand its cumulative power generation. The power generation data is presented in charts, enabling quick visualization of the main characteristics and trends over time. This facilitates more comprehensive data analysis of the current power station and enables the formulation of more precise strategies and plans for its future development.

### 2) Energy Conservation, Emission Reduction, and Revenue

The Energy Conservation, Emission Reduction, and Revenue section calculates and displays four types of data for the current power station: standard coal savings, CO<sub>2</sub> emission reductions, equivalent tree planting, and cumulative revenue. Based on the power generation data and revenue information, this section provides intuitive data visualization, enabling users to adjust energy usage strategies, optimize operational strategies, and make predictions and plans to improve return on investment.

### 3) Electric Energy Analysis

The Electric Energy Analysis section displays and analyzes the usage of photovoltaic power generation and the sources of load power consumption, as well as the proportional relationship between them. It is used to monitor the stable operation of the system in real-time, ensuring that the system remains stable when fluctuations occur in photovoltaic and load power. It also analyzes the trends in photovoltaic power generation and load power consumption, predicts future power demand over a certain period, and schedules the energy storage system to charge or discharge in advance, thereby improving the utilization rate of electric energy.

### 4) Real-time Data

The Real-time Data section displays cumulative data on battery charging and discharging, grid sales and purchases, and load power consumption. This information helps users understand the overall energy consumption of the system.

## 4 Cloud Platform Merchant

### 4.1 Overview of Cloud Platform Merchant

#### 4.1.1 Introduction

Agent Portal boasts a rich array of features, encompassing all aspects of power station management from construction to operation, fulfilling your one-stop management needs seamlessly. Additionally, we offer device-centric practical functions such as alarm management, device upgrade management, and control command management to major equipment manufacturers and their dealers.

#### 4.1.2 Data Overview

The Data Overview module displays the distribution of all power stations under the account on a map, enabling real-time monitoring of their status and overall power generation data with rankings. This significantly enhances power generation efficiency and facilitates data analysis.

#### 4.1.3 Monitoring

The Monitoring module serves as the core function of the Agent Portal, assisting merchants in real-time monitoring of power stations and devices. With user authorization, merchants can manage and maintain power stations efficiently and conveniently through collaborative efforts.

#### 4.1.4 Equipment Inventory

The Equipment Inventory module records all devices owned by the merchant. Once these devices are put into use by end-users, their data and operation records can be viewed. Merchants can access device data and configure parameters for online devices through the inventory.

#### 4.1.5 Product Management

The Product Management module encompasses two critical functions: Firmware Management and Command Management, facilitating seamless device upgrade and command authorization for merchants.

**Firmware Management:** This function aids merchants in uploading, managing, and deleting firmware required for device upgrades. Through this feature, merchants can effortlessly maintain the latest versions of their devices, ensuring optimal performance.

**Command Management:** This function enables merchants to authorize device commands to C-end users, achieving flexible control and management of devices. Merchants can conveniently authorize users, view authorization lists, manage command lists, and track operation logs.

## 4.1.6 Record Management

Record Management encompasses functionalities like Alarm Records, Data Export Reports, and Operation Logs.

The Alarm Module displays alert information from authorized power stations. The Report Module is designed for exporting data from power stations and devices, with configurable export parameters. This helps merchants compile statistics on power stations and devices across different time periods, enabling them to stay informed about their operational status anytime, anywhere, and make more precise decisions based on the analysis of exported data. Meanwhile, Operation Logs facilitate troubleshooting by providing records of device command issuance and firmware upgrades.

## 4.1.7 Large Screen Display

The Large-screen Display Module provides merchants with a visual and clear presentation of power station data, enabling them to have a comprehensive understanding of the operational status of the power stations and making more scientific and effective management decisions.

## 4.1.8 Company Management

The large-screen display module provides merchants with intuitive and clear data presentations of power stations, enabling them to have a comprehensive understanding of the operational status of the power stations and make more scientific and effective management decisions.

## 4.2 Registration and Login

### 4.2.1 Registration Process

If your email address is used for the first time to register for Agent Platform, you need to complete the account information according to the page prompts during the registration process. After the registration is successful, you can log in. The following is a diagram.

#### 1) Click to Register



## 2) Obtain Verification Code

The screenshot shows a registration form with a progress bar at the top. The progress bar has four steps: 1. Enter E-mail (highlighted in orange), 2. Enter Account Info, 3. Enter Business Info, and 4. Registered. The form fields include:

- E-mail: A text input field with the placeholder text "E-mail".
- Verification Code: A text input field with a "Send" button to its right.
- Next: A wide, light gray button labeled "Next".
- Agreement: A checkbox followed by the text "I have read and agree T&Cs Privacy Policy".

## 3) Complete Account Information

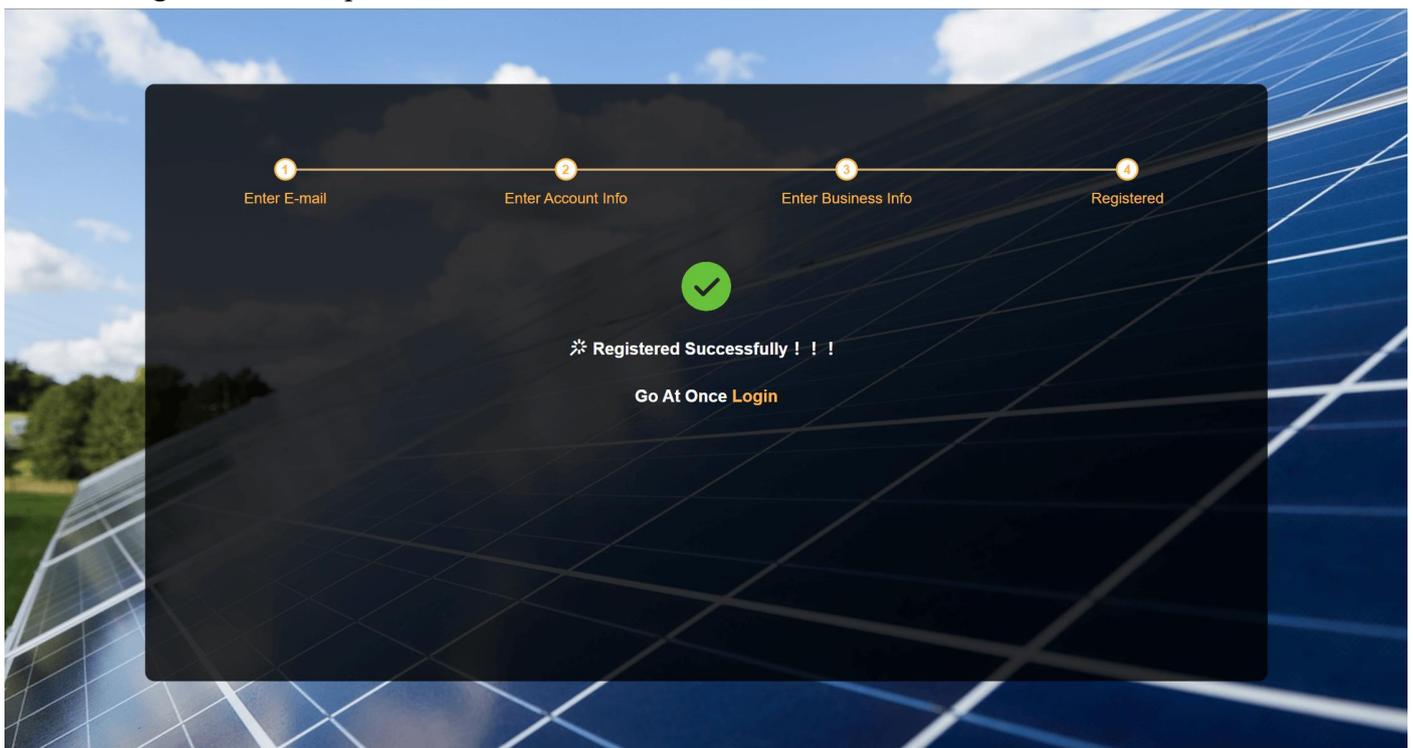
The screenshot shows the same registration form with the progress bar updated. Step 2, "Enter Account Info", is now highlighted in orange. The form fields include:

- Name: A text input field.
- Username: A text input field with a help icon (i) to its right.
- Password: A text input field with a help icon (i) to its right and a toggle icon (eye) to its left.
- Please Confirm: A text input field with a toggle icon (eye) to its left.
- Next: A wide, orange button labeled "Next".

#### 4) Complete Company Information

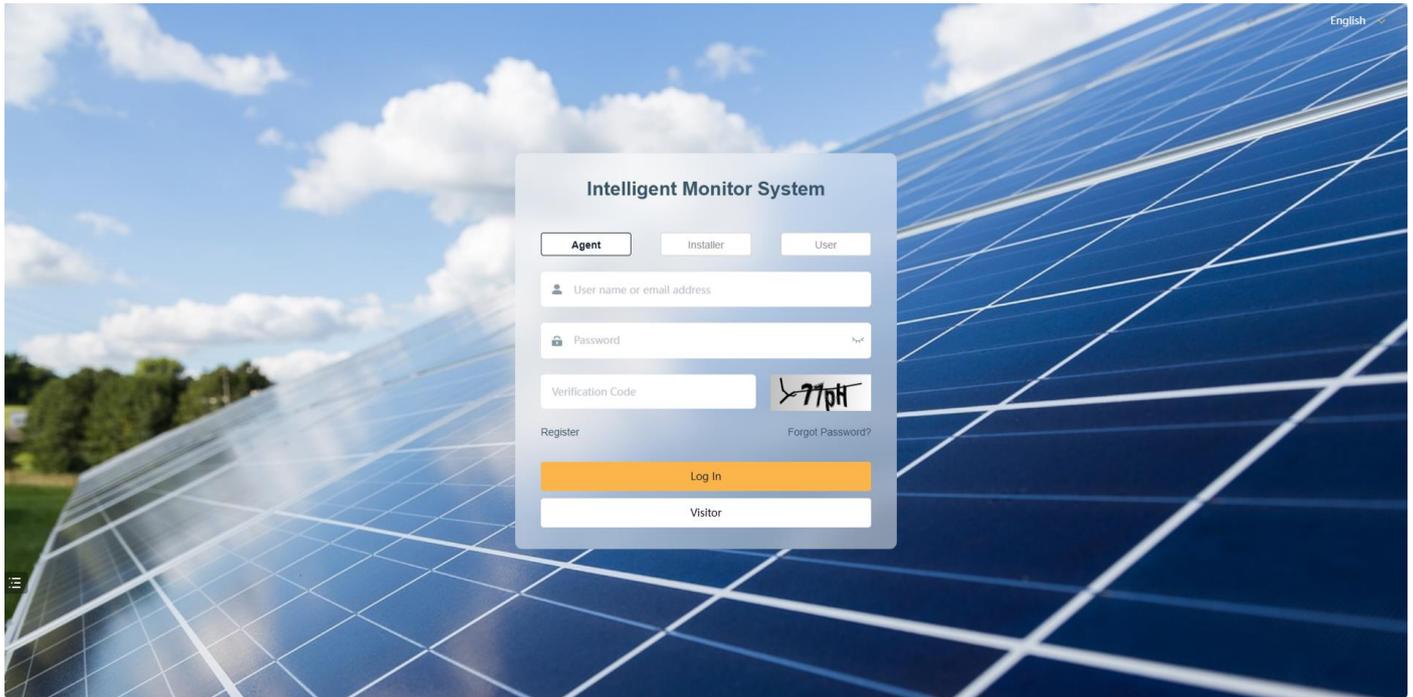
The registration form is displayed on a dark background with a grid pattern. At the top, a progress bar shows four steps: 1. Enter E-mail, 2. Enter Account Info, 3. Enter Business Info, and 4. Registered. The 'Enter Business Info' step is currently active. Below the progress bar, there are two input fields: 'Business Area' with a dropdown menu showing 'China', and 'Business Name' with a dropdown menu showing '简体中文' and a text input field. A large orange 'Next' button is centered at the bottom of the form.

#### 5) Registration Completed



## 4.2.2 Login Process

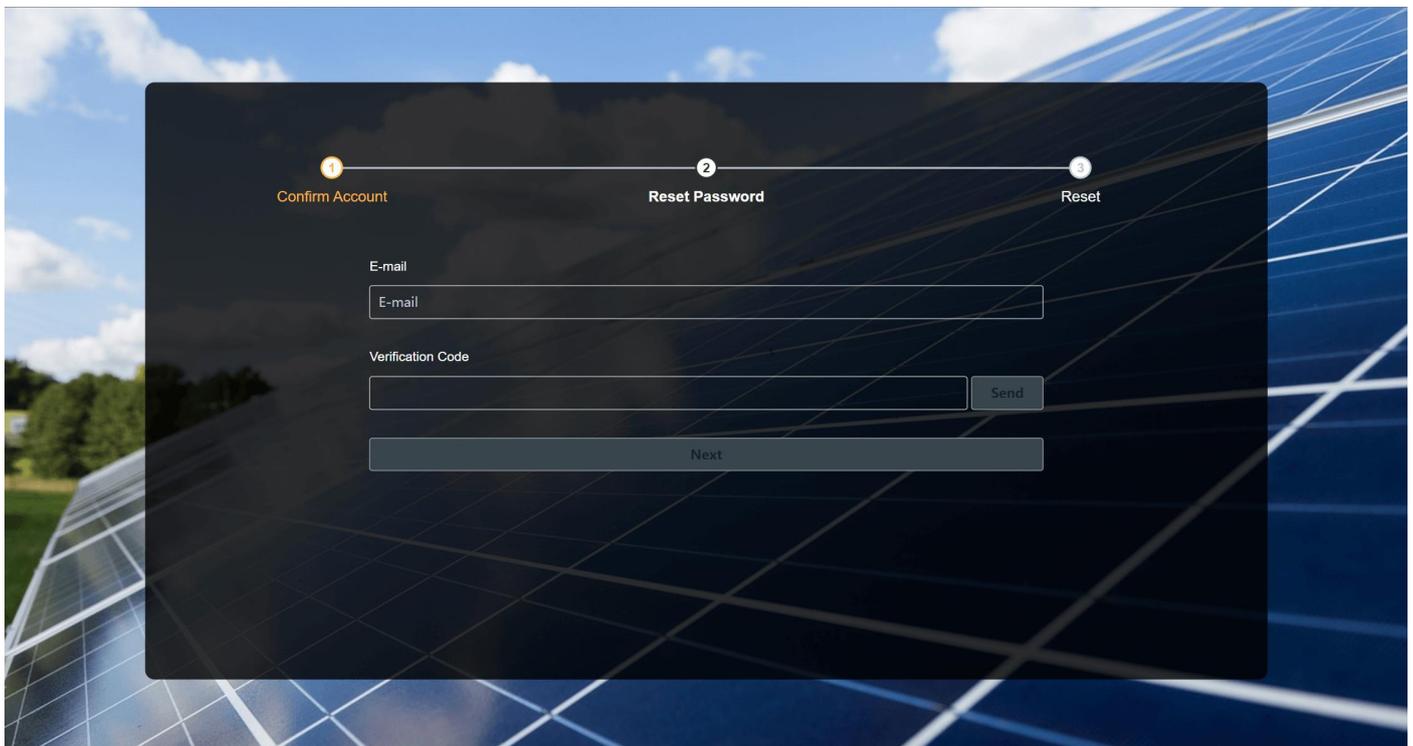
After completing the account registration, use the email or username you used during registration to log in, enter the corresponding password, and click "Login" to access the cloud platform agent side.



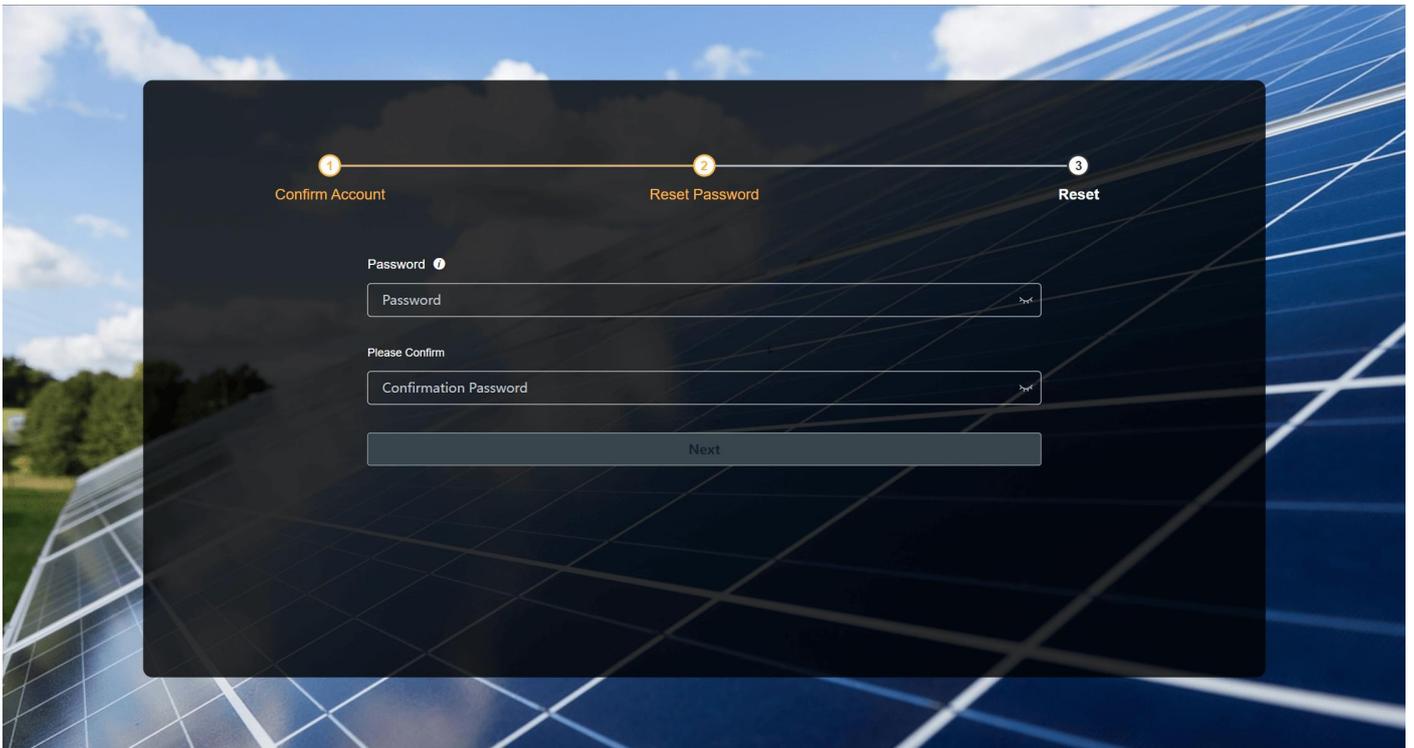
## 4.2.3 Forgot Password

When you forget your account password, click "Forgot Password?" to enter the password reset interface and complete the password reset through the email you used during registration.

### 1) Confirm Account

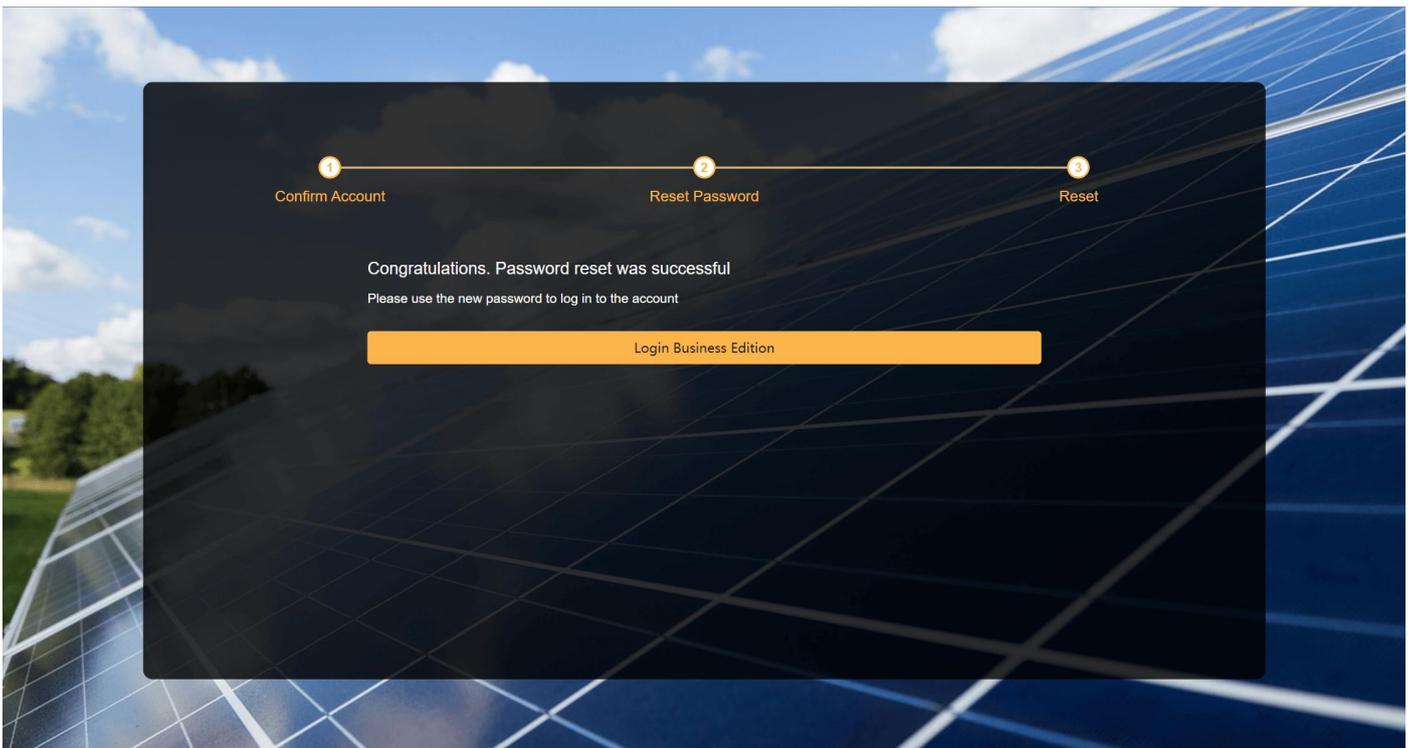


## 2) Reset Password



The screenshot shows a dark-themed modal window with a progress indicator at the top. The indicator consists of three numbered steps: 1. Confirm Account, 2. Reset Password (the current step), and 3. Reset. Below the progress bar, there are two input fields: 'Password' and 'Please Confirm' (with 'Confirmation Password' as a placeholder). A 'Next' button is located at the bottom of the form area.

## 3) Password Reset Successful

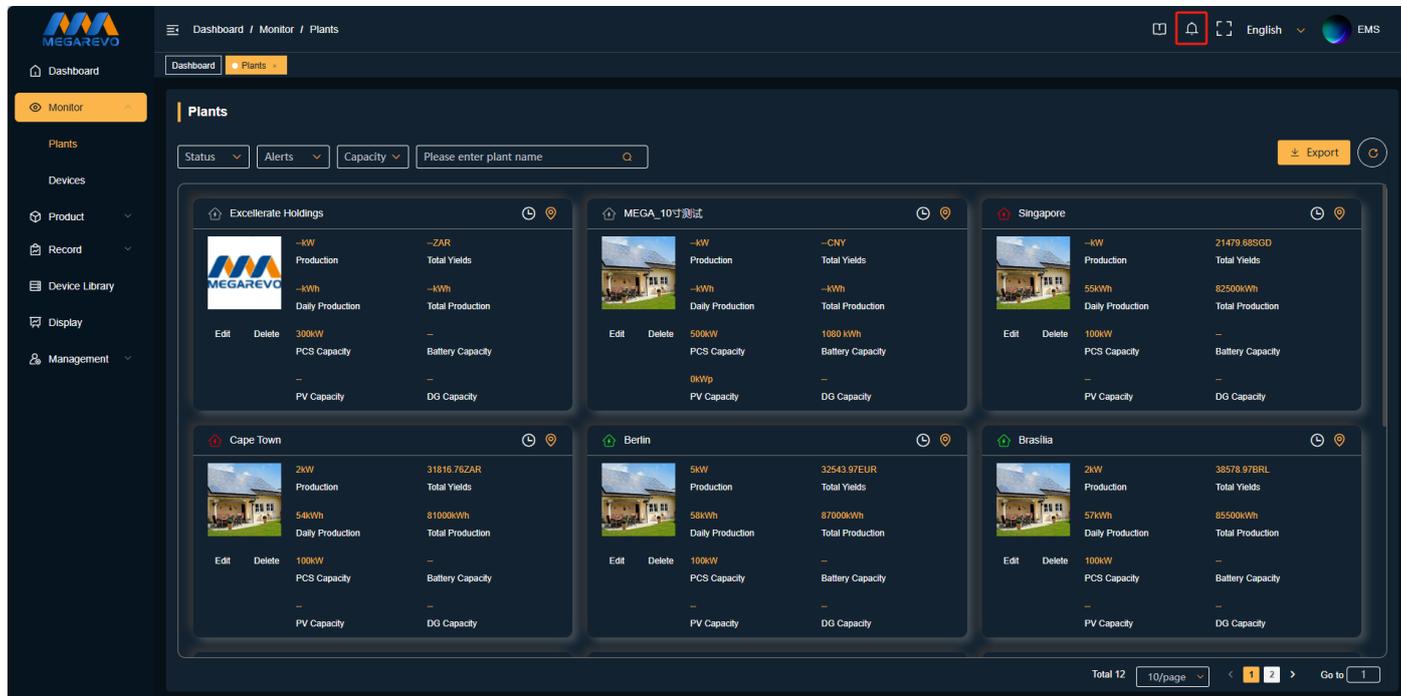


The screenshot shows the same dark-themed modal window. The progress indicator now shows step 2, 'Reset Password', as completed. The main content area displays the message: 'Congratulations. Password reset was successful' followed by 'Please use the new password to log in to the account'. A prominent orange button labeled 'Login Business Edition' is centered at the bottom.

## 4.3 Basic Functions

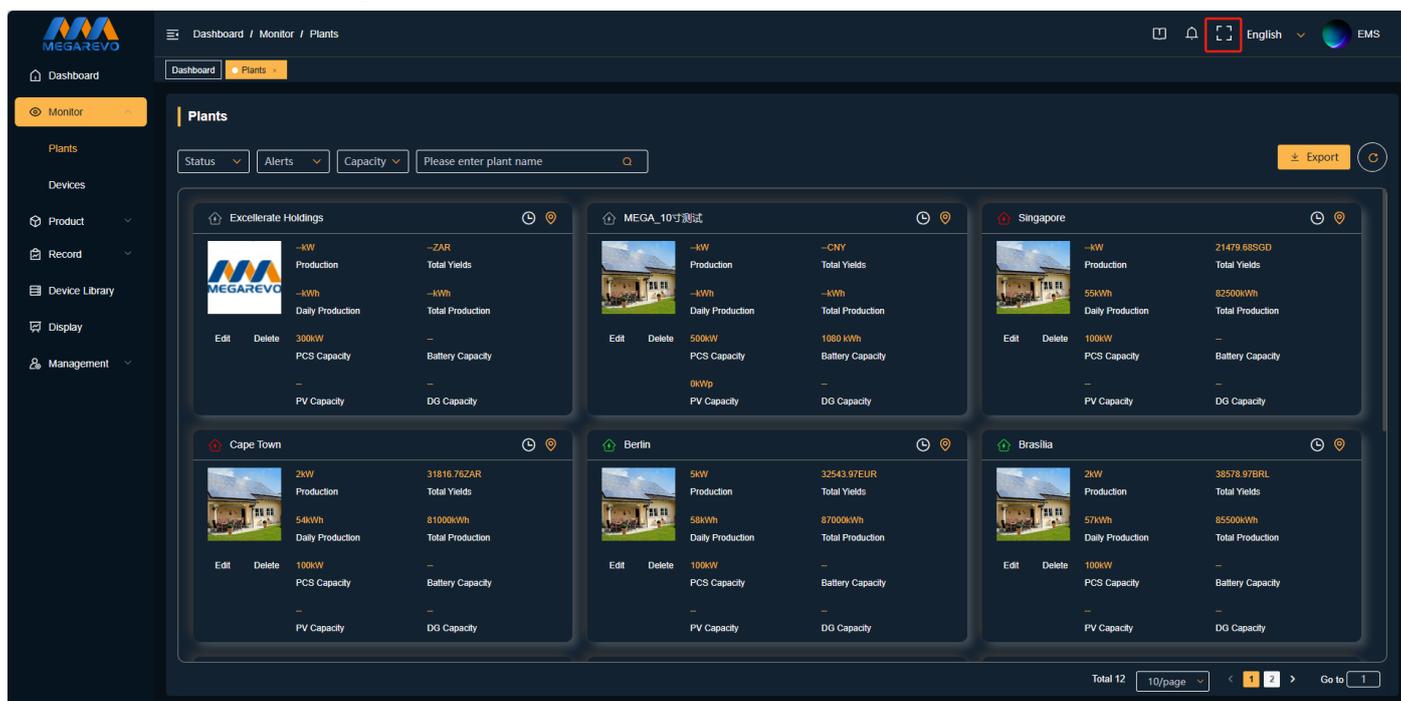
### 4.3.1 Message Alerts

Clicking on this icon will display the ongoing alerts and their solutions for the power stations under your account. It supports displaying alert messages within six months.



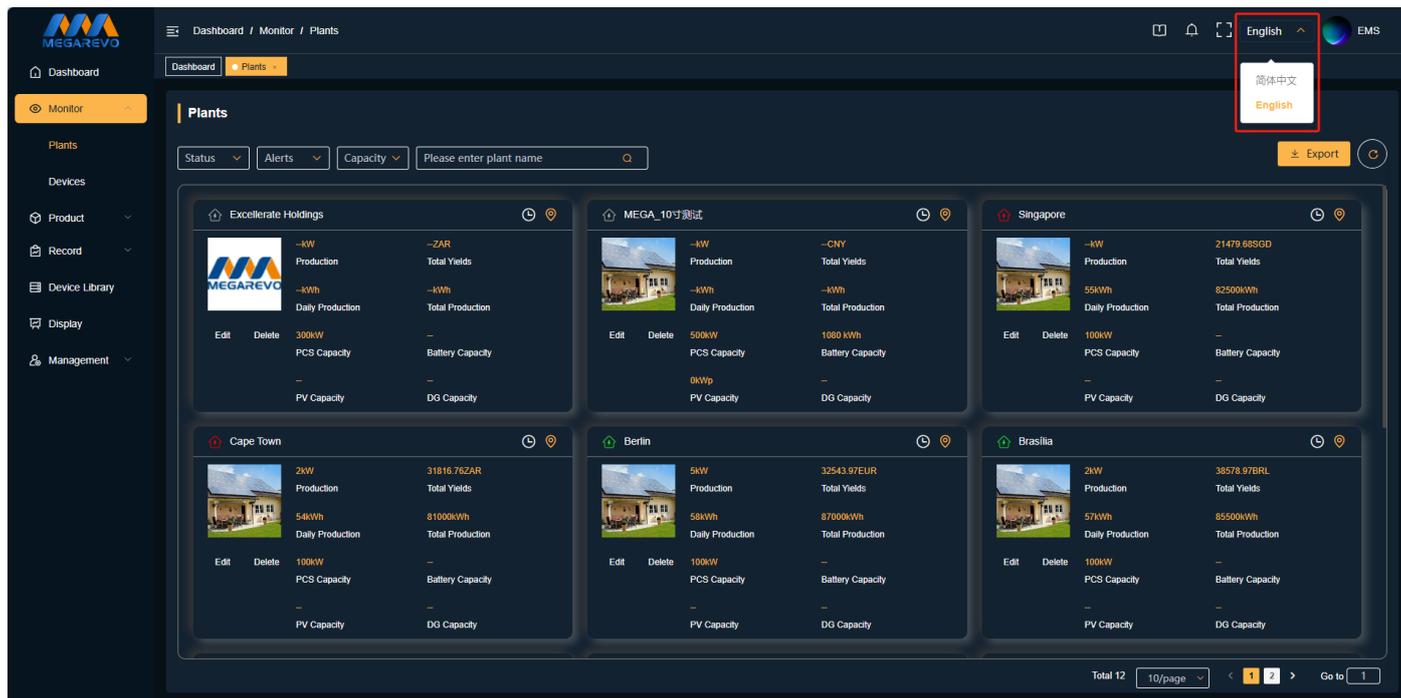
### 4.3.2 Full-screen Function

Clicking on this icon will enter the full-screen mode of the page, providing a broader field of vision and a more comfortable user experience.



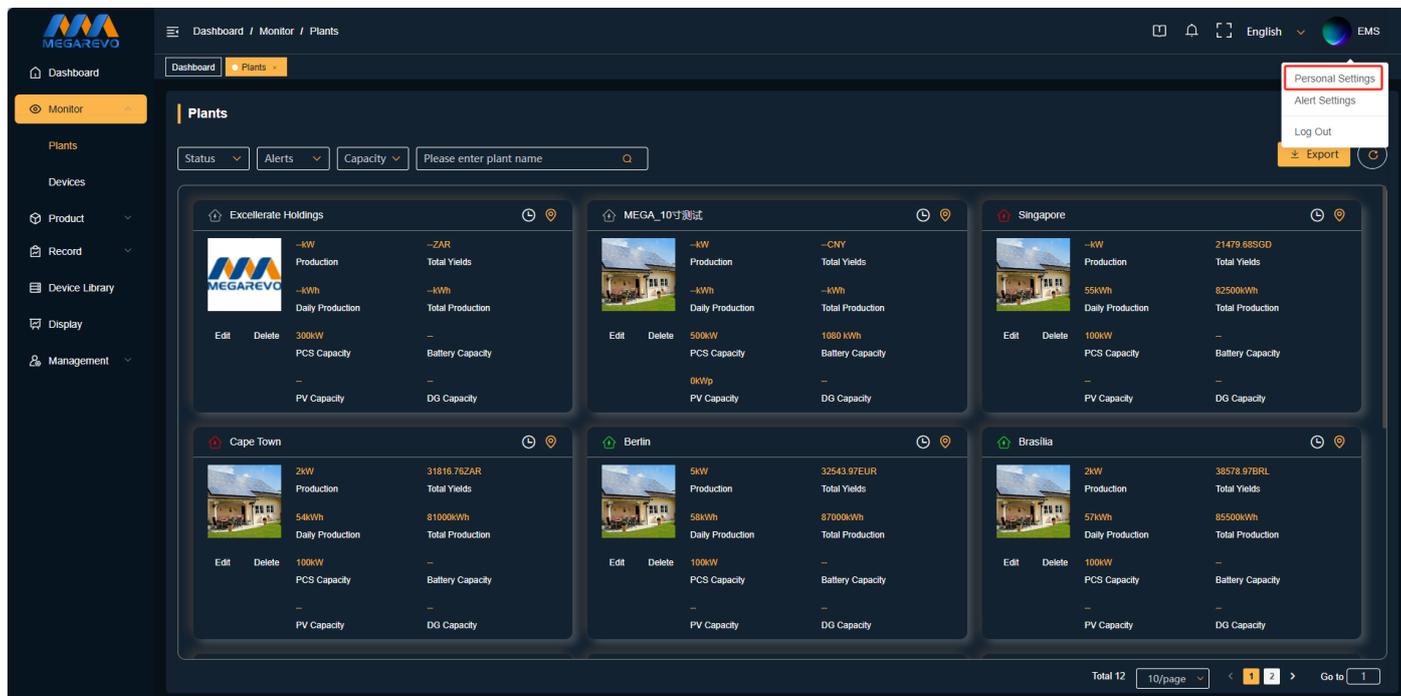
### 4.3.3 Language Switch

You can select the interface language based on your usage needs. The system currently supports two languages: Simplified Chinese and English.



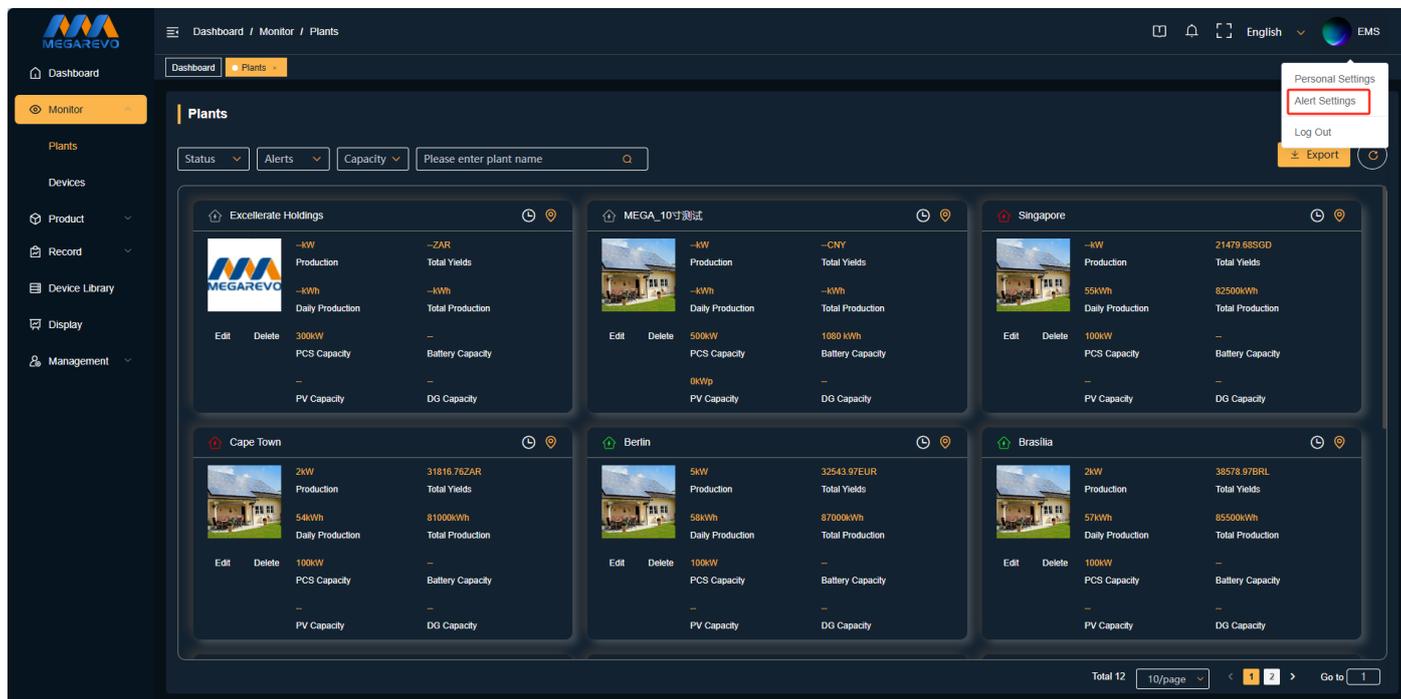
### 4.3.4 Personal Settings

Entering the personal information page will display the personal information set during account registration, allowing you to modify your personal information. This page also includes an account deletion function, which can be used to delete your account after meeting the deletion conditions.



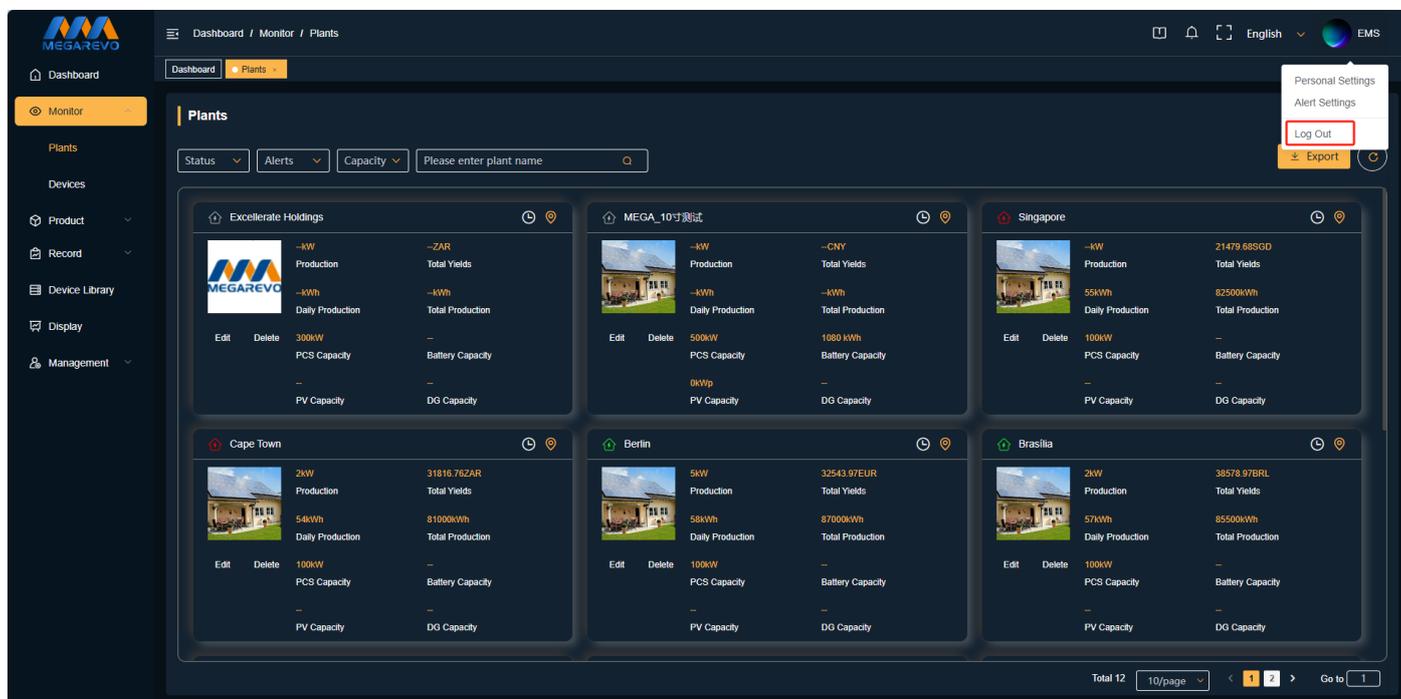
### 4.3.5 Alert Settings

Configure the notification method for alert information based on your needs. Configuration content includes: whether to allow notifications, alert level for notifications, alert frequency, notification method, and notification recipient.



### 4.3.6 Logout

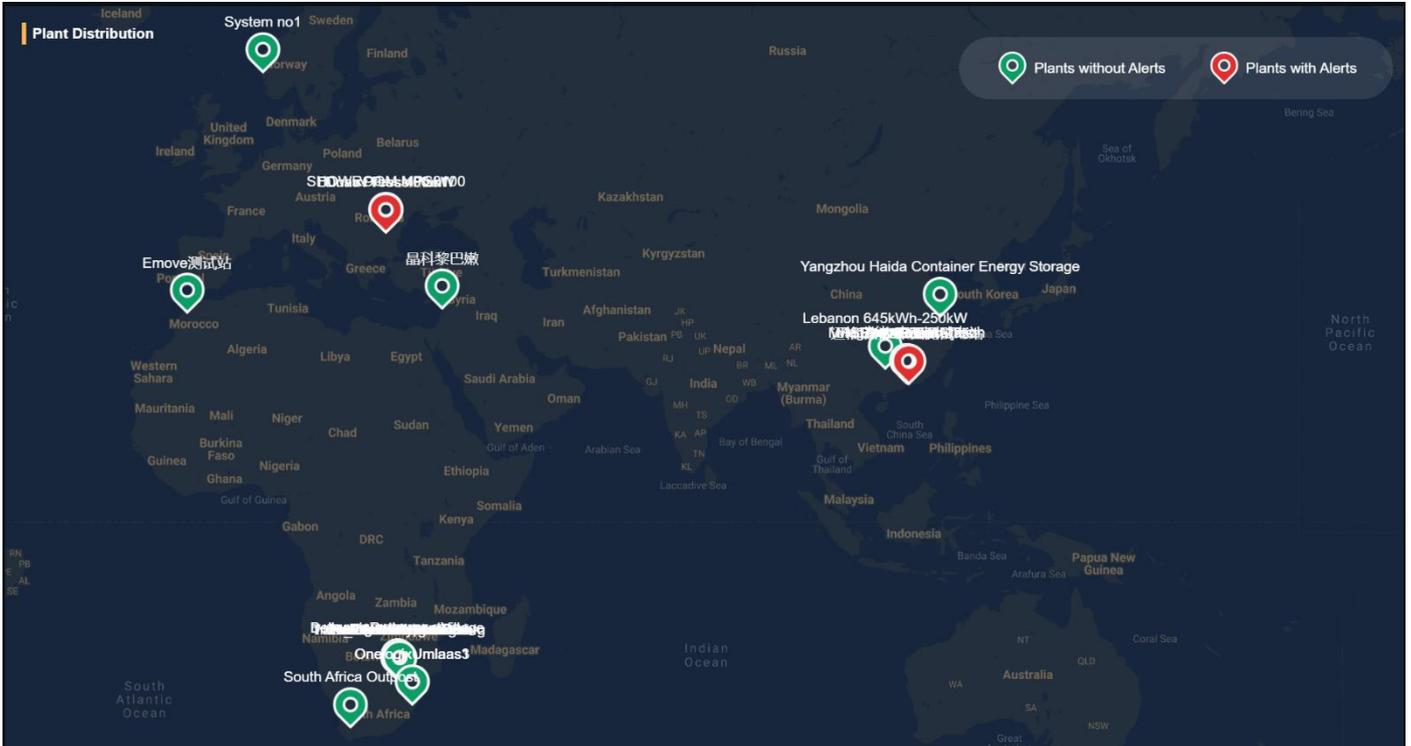
Clicking Logout will safely exit the current account's login state and redirect you to the login page.



## 4.4 Power Station Information

### 4.4.1 Power Station Distribution

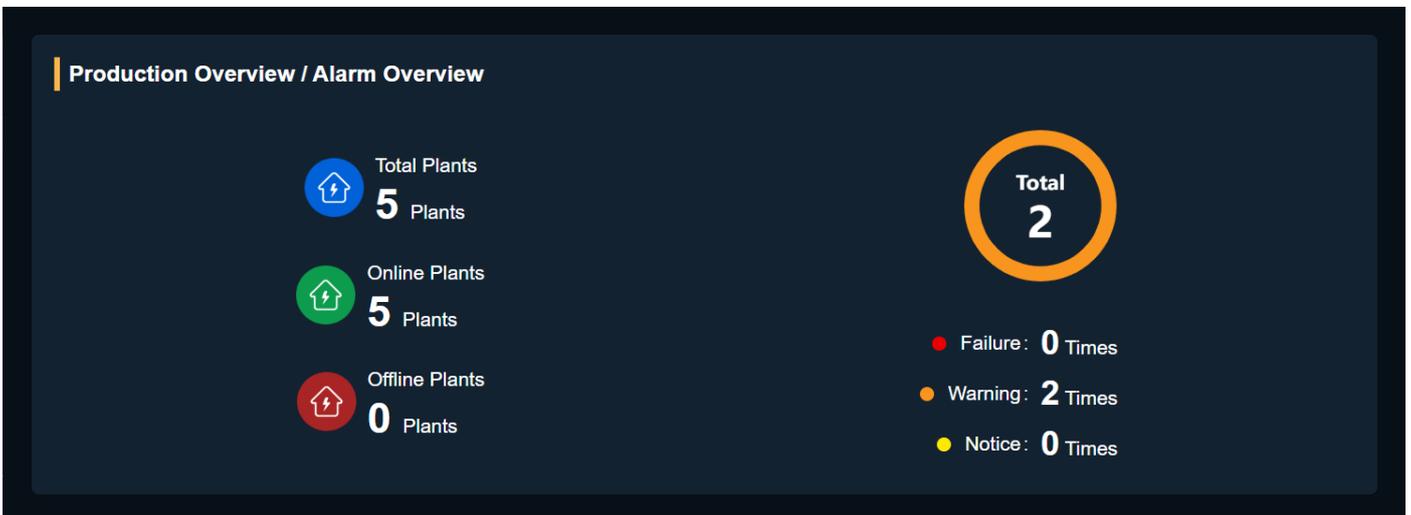
based on their longitude and latitude. Clicking on a marker will redirect to the detailed information page of the corresponding power station, allowing users to quickly view and manage the operational status of each power station.



### 4.4.2 Power Station Overview/Warning Summary

The Power Station Overview section displays the total number of power stations under the account as well as the number of power stations in different online states, providing a visual representation of the operational status of the power stations under the account.

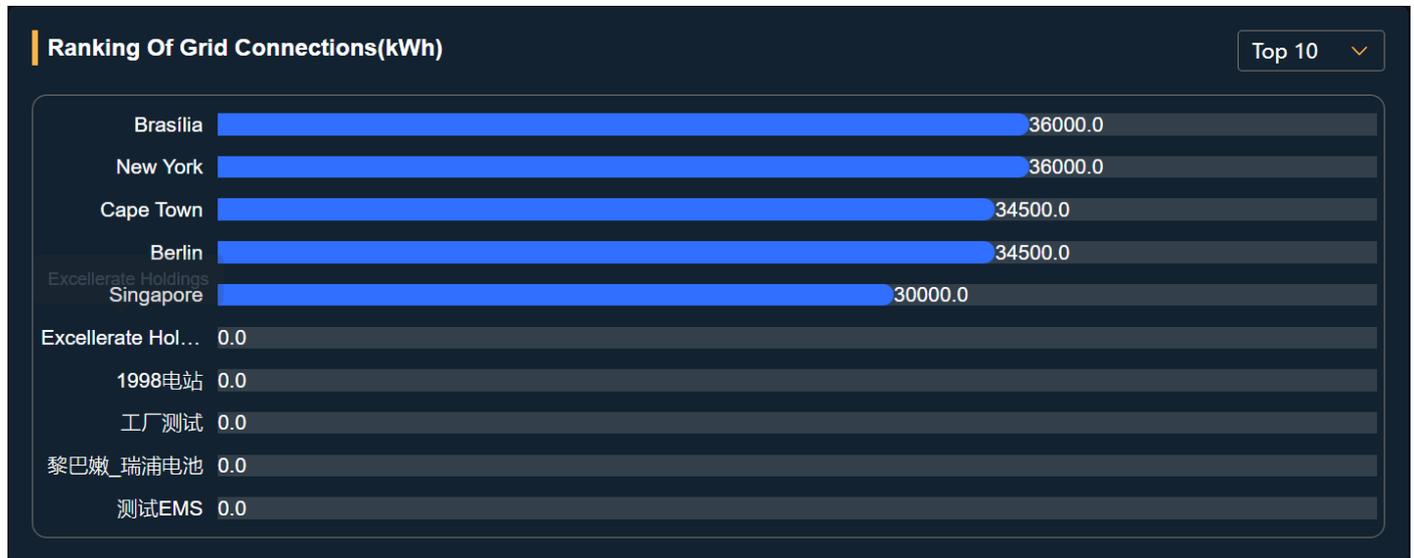
The Warning Summary section compiles statistics on the total number of ongoing alerts for all power stations under the account and displays the number and proportion of alerts with different severity levels. This allows timely measures to be taken in response to various issues when alerts occur.



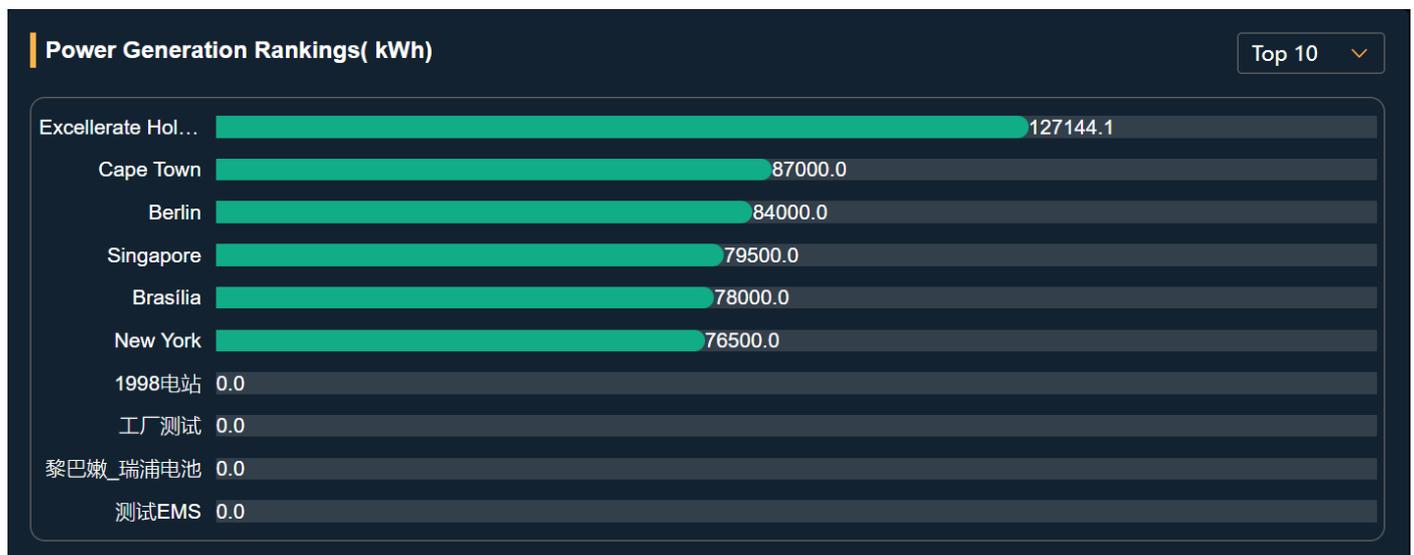
### 4.4.3 Power Station Rankings

The Power Station Rankings section is designed with three ranking methods: Grid Connection Volume Ranking, Photovoltaic Power Generation Ranking, and Power Station Revenue Ranking. These rankings allow for a comparison of the performance and performance of each power station, enabling targeted management and optimization decisions to be made.

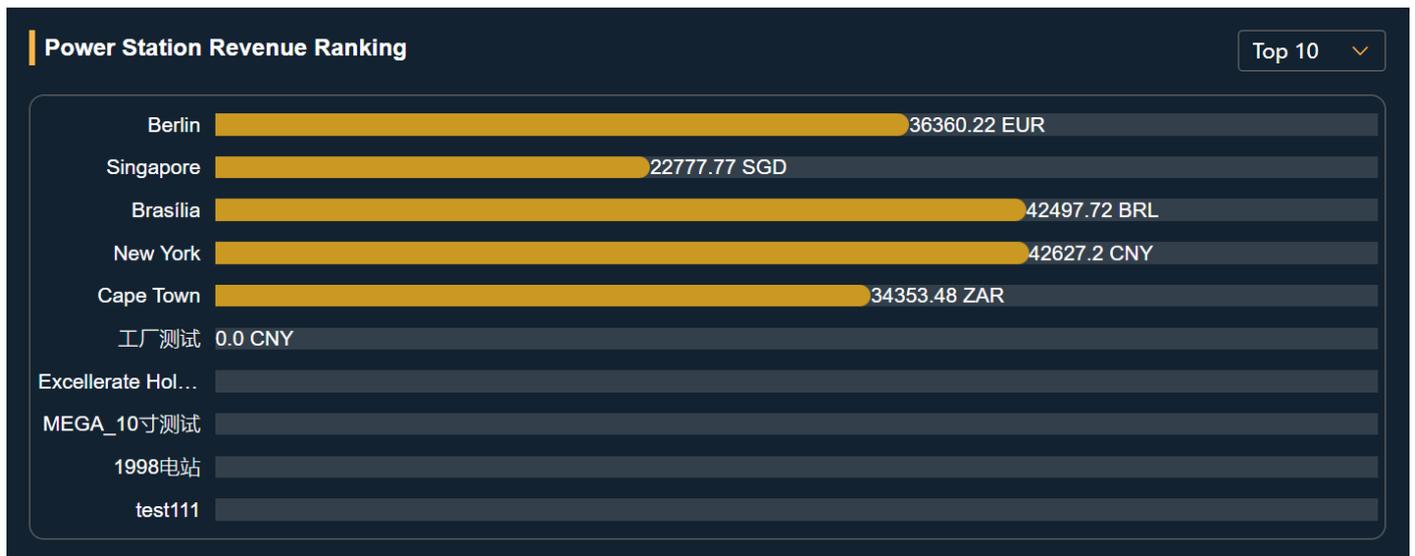
#### 1) Grid Connection Volume Ranking



#### 2) Photovoltaic Power Generation Ranking



### 3) Power Station Revenue Ranking



#### 4.4.4 Overall Power Generation Data

The Overall Power Generation Data section presents statistical data and some key data of authorized power stations, allowing users to understand the total installed capacity, cumulative power generation, and power generation efficiency of the power station. The power generation data is visualized in charts, enabling quick capture of the main characteristics and trends of the power generation data over time. This facilitates more comprehensive data analysis of the power stations under the account and aids in developing more precise strategies and plans for the future development of the power stations.

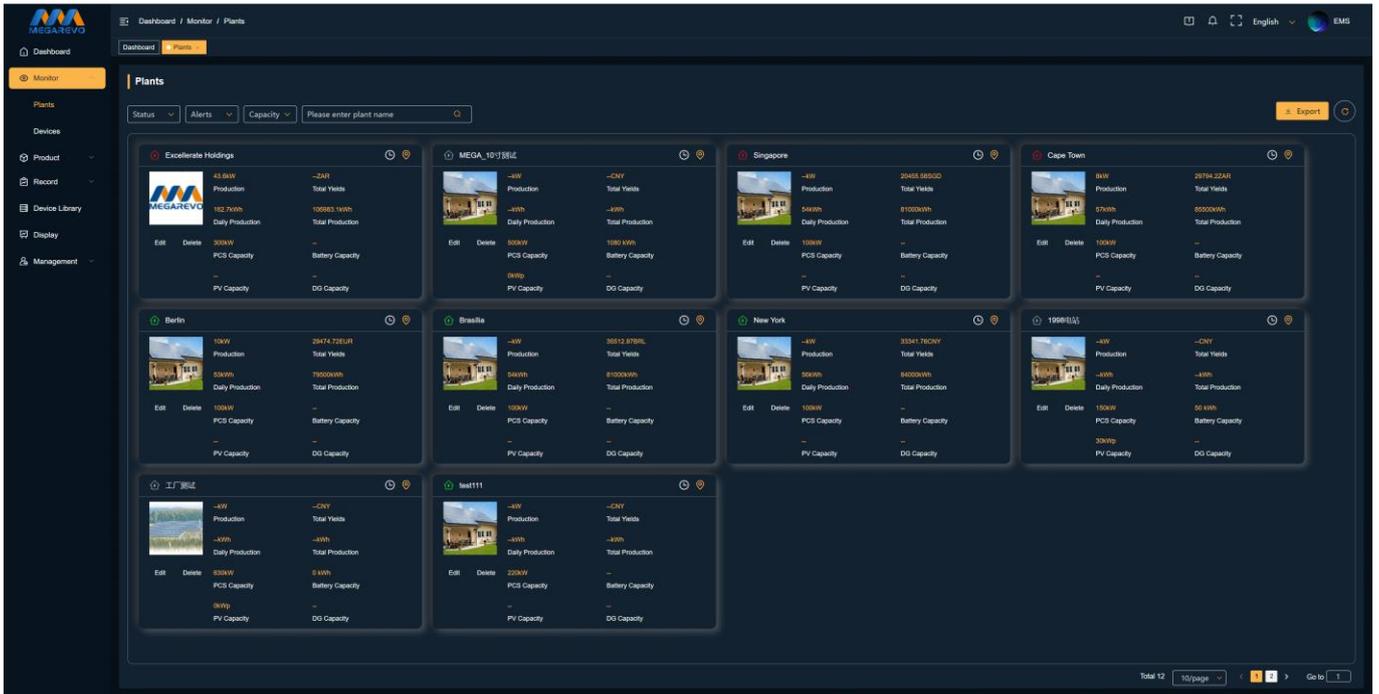


### 4.4.5 Power Station

The Power Station section allows access to all information and data of authorized power stations. When authorized as a manager, users can also manage individual power stations. This section is primarily used to view the status and important data of the power stations.

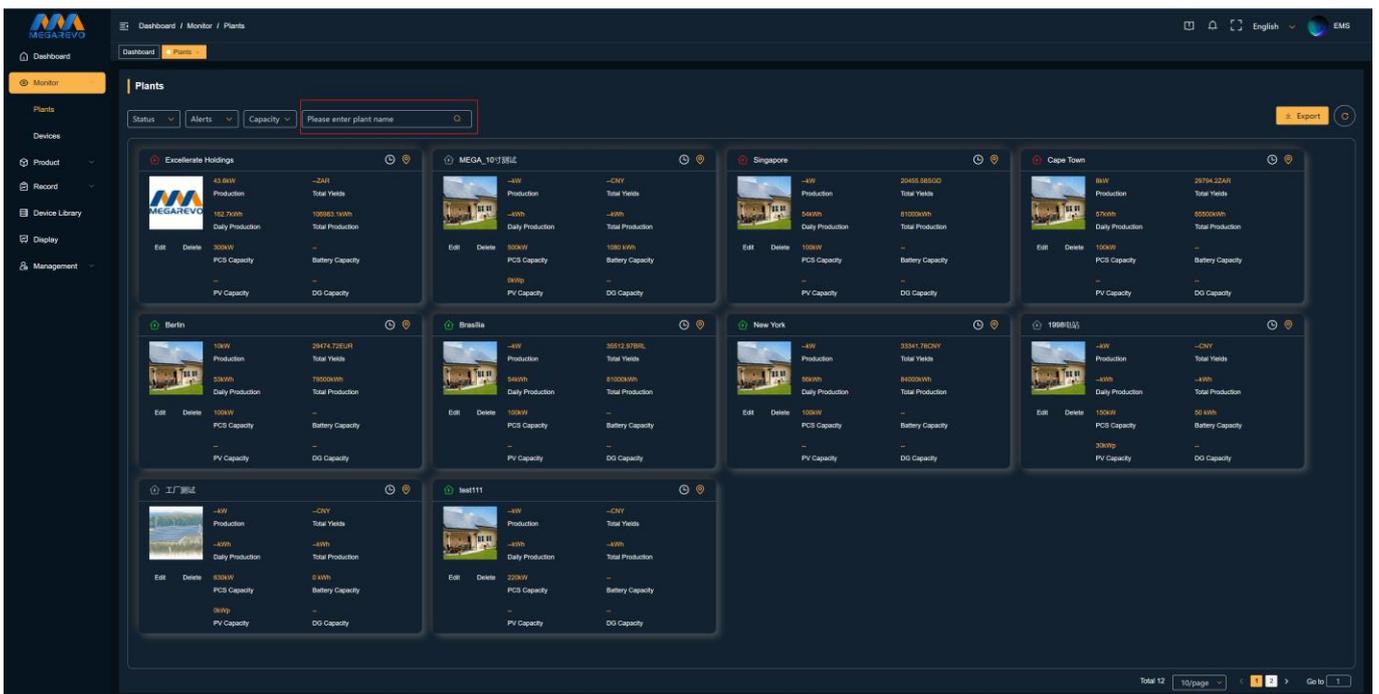
The Power Station List displays the following information: Power Station Name, Power Station Address, Communication Details, Alerts, Installed Capacity, Power Generation Capacity, Power Generation Efficiency, Daily Power Generation, Daily Full-Load Hours, Last Data Update Time, Construction Date, and Installer.

#### 1) Power Station List



#### 2) Power Station Filtering Description

a. Power Station Search: When you need to quickly find a specific power station, enter the power station name, and the page will provide the most relevant results for your search.

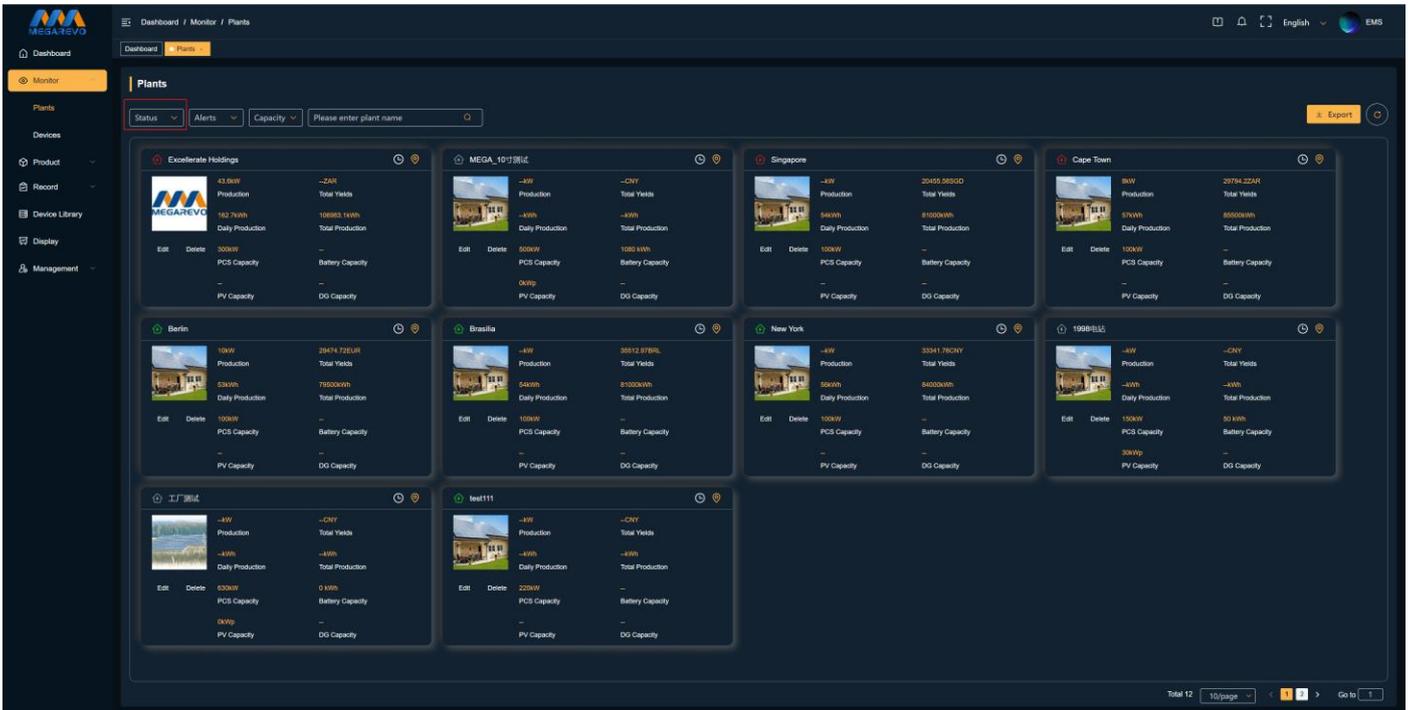


b. Device Status: Filter by whether the devices in the power station are uploading data and their online status. Filtering conditions:

All: All power stations

Online: All devices within the power station are in an online state

Offline: All devices within the station are in an offline state

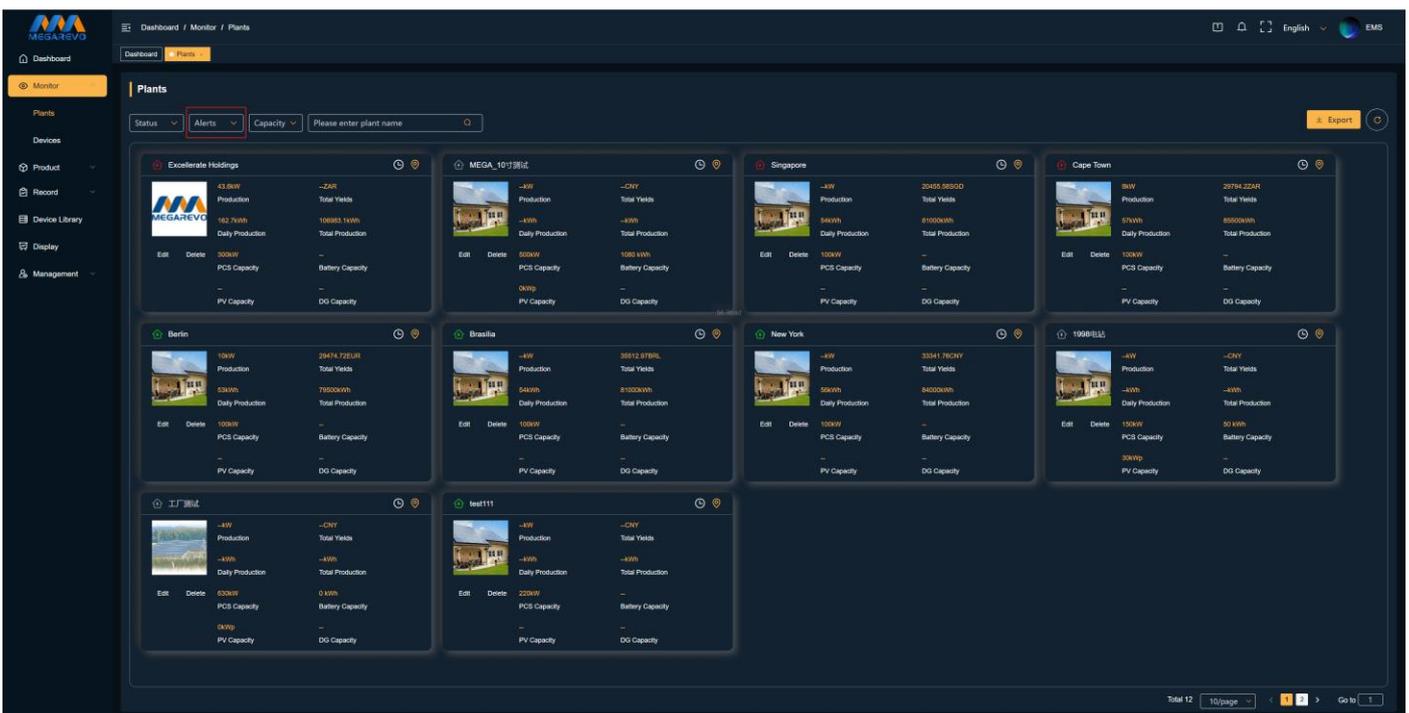


c. Device Alerts: Filter by whether there are active alerts on the devices in the power station. Filtering conditions:

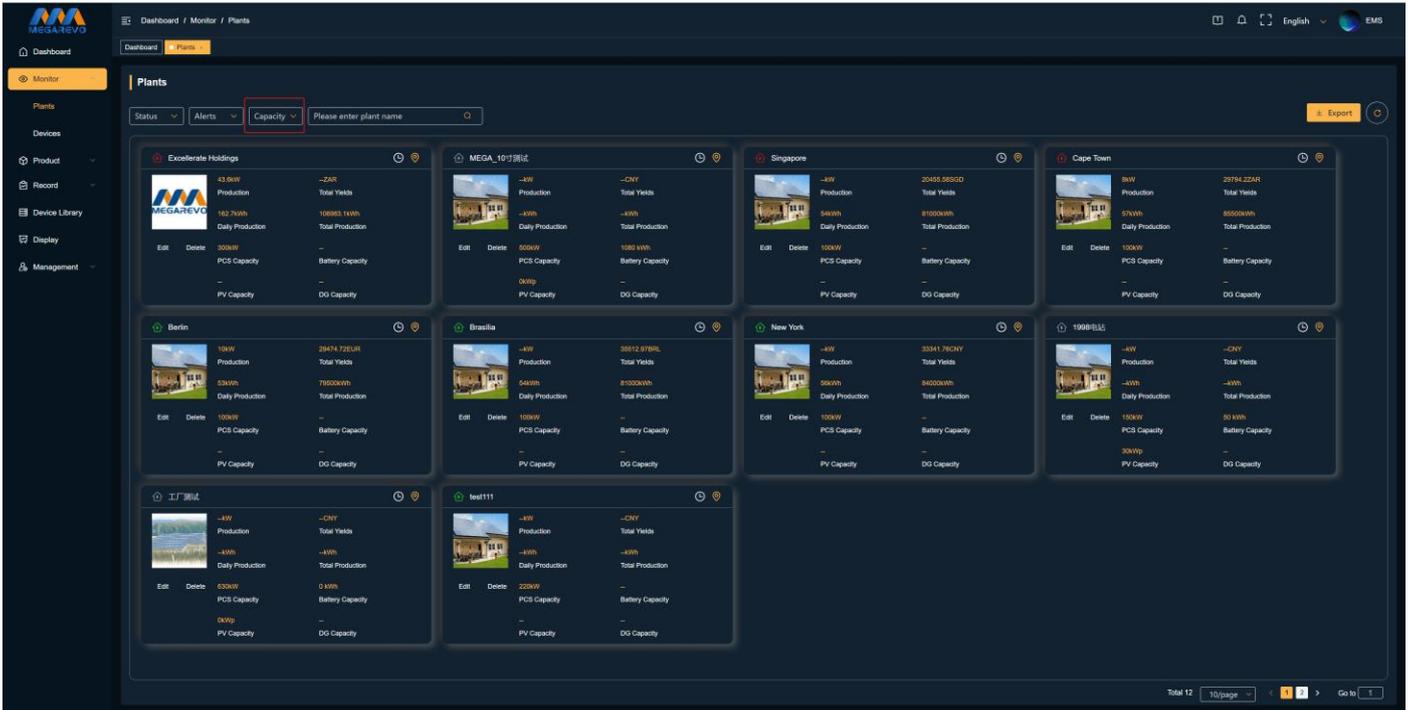
All: All power stations

No Alerts: None of the devices within the power station have active alerts

With Alerts: Some or all devices within the power station have active alerts



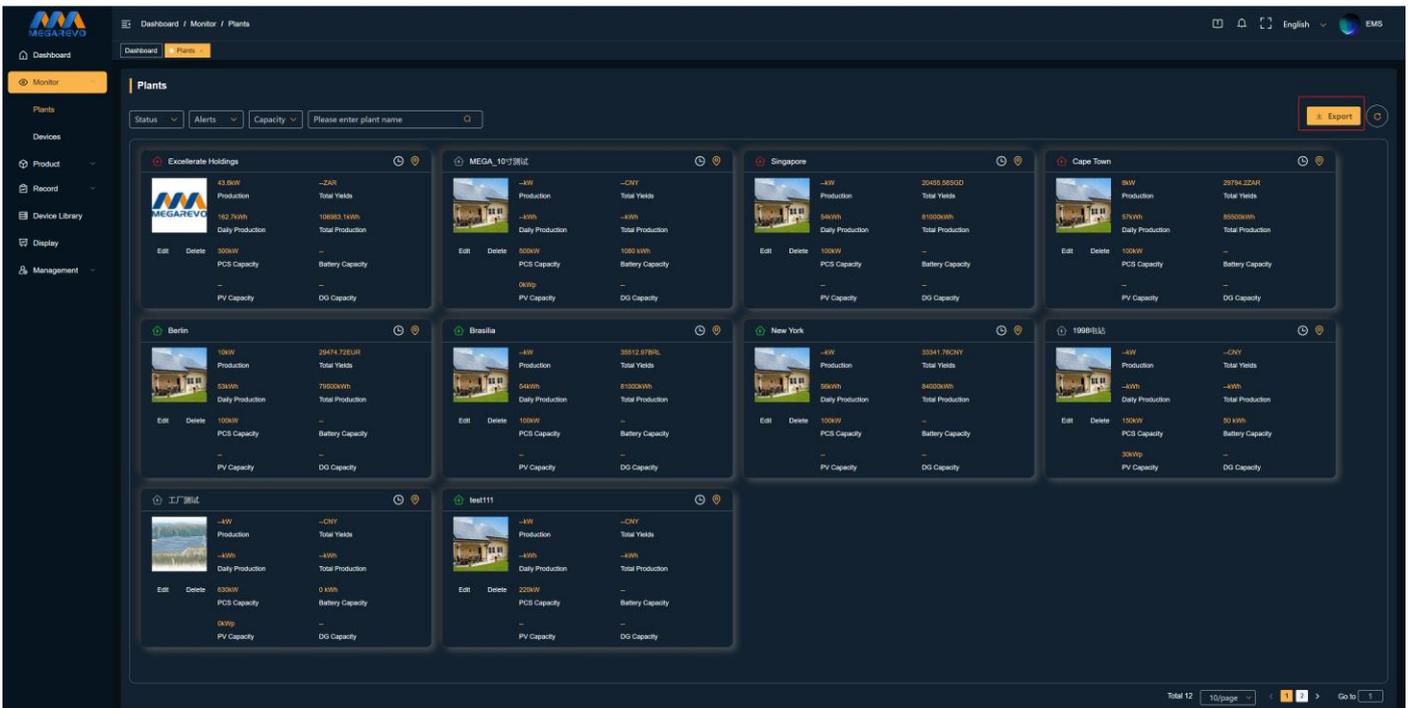
d. Installed Capacity: Filter power stations by their PCS installed capacity: 30~100kWp, 100~500kWp, above 500kWp.



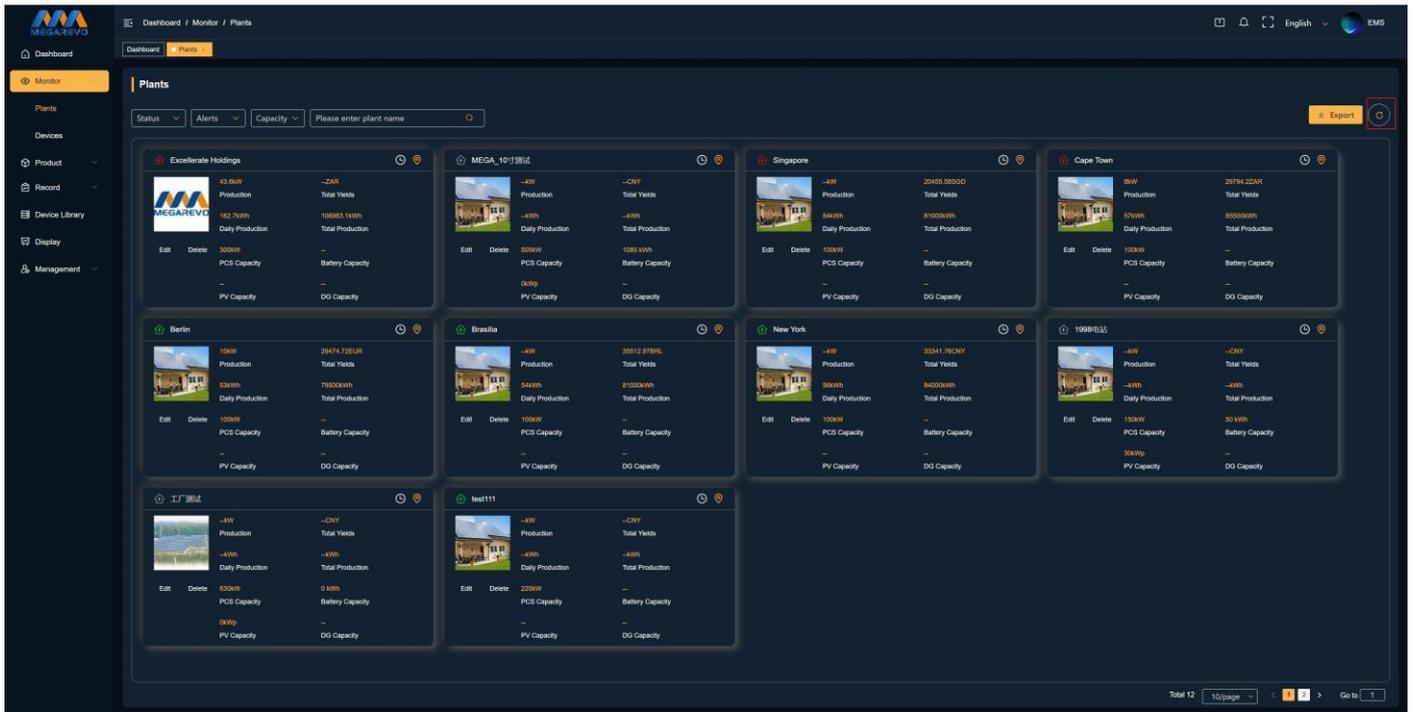
### 3) Data Export Function

Export some important data from the currently filtered and displayed power station list.

Exported Data Content: Power Station ID, Power Station Name, Power Station Address, Communication Status, Alert Status, Installed Capacity, Power Generation Capacity, Power Generation Efficiency, Daily Power Generation, Daily Full-Load Hours, Last Data Update Time, Construction Date, Installer.

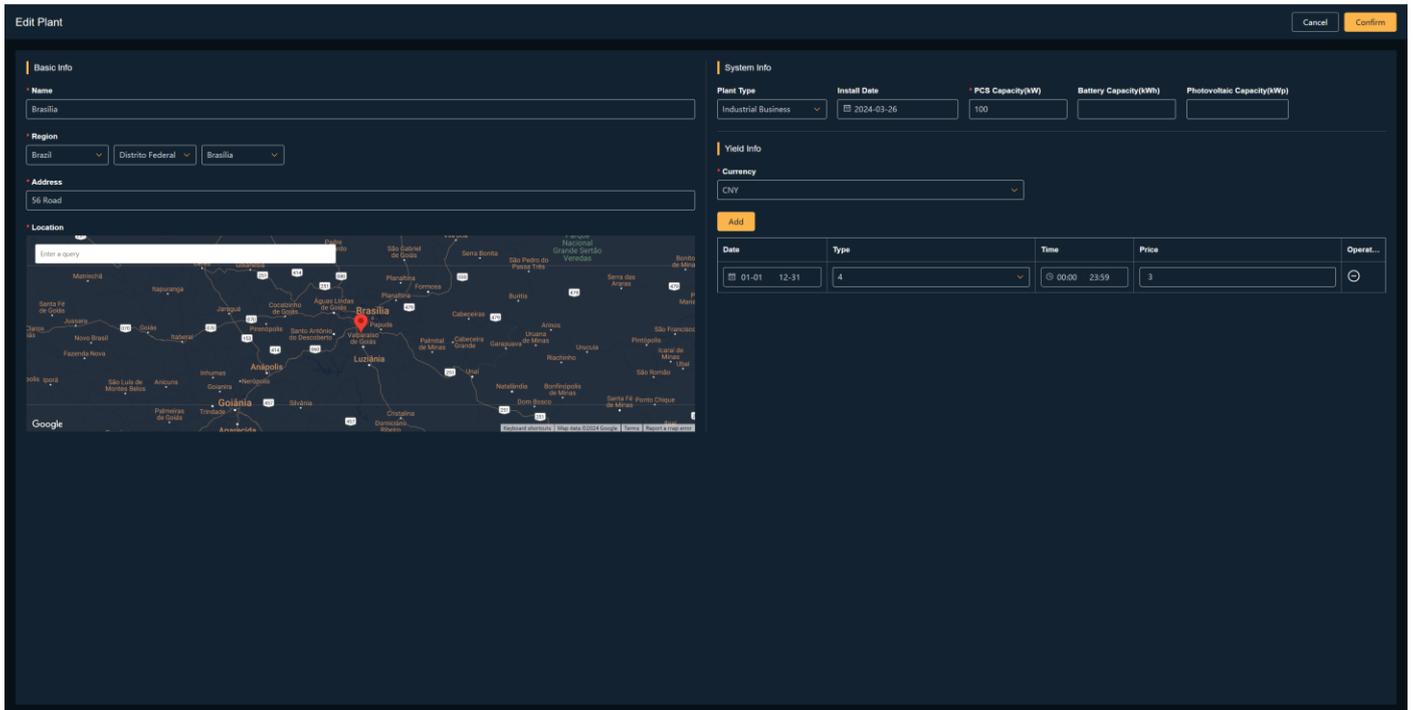


#### 4) Page Refresh Function



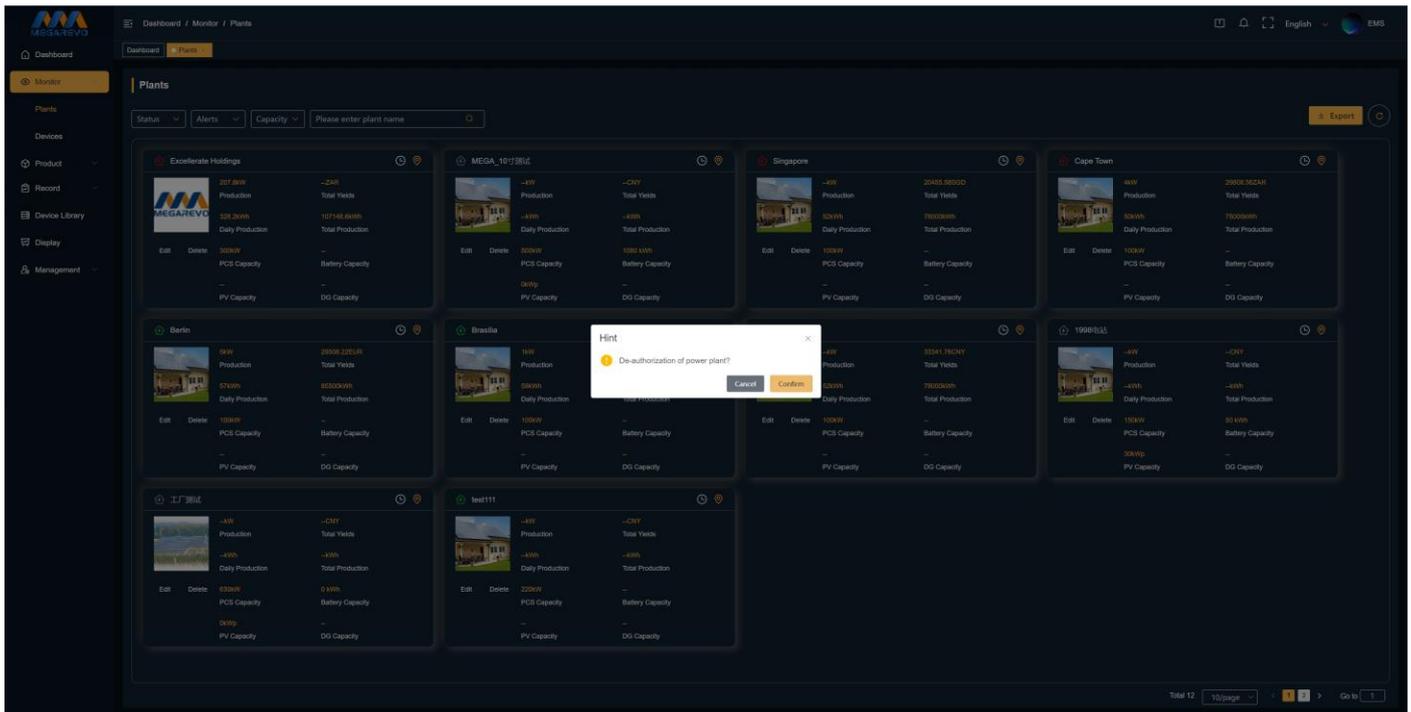
#### 5) Edit Power Station Function

When the authorized power station sets the agent's permission as an administrator, it can edit and save the power station information.



## 6) Power Station Deletion

Selecting to delete the power station will cancel the authorization relationship between the agent and the authorized power station.



## 7) Power Station Details

Click on the SN of a single power station in the power station list to enter the details page of that power station. The details page is divided into four sections: data overview, power station equipment, alerts, and power station information.

### a. Homepage

The homepage of a single power station differs from the overall homepage. The homepage of a single power station features six functional sections: power station information (simplified content), weather, flow diagram, power generation data graph, energy analysis, energy conservation, emission reduction, and income.

The power station information section displays some basic information about the power station: power station name, power station address, and power station type.

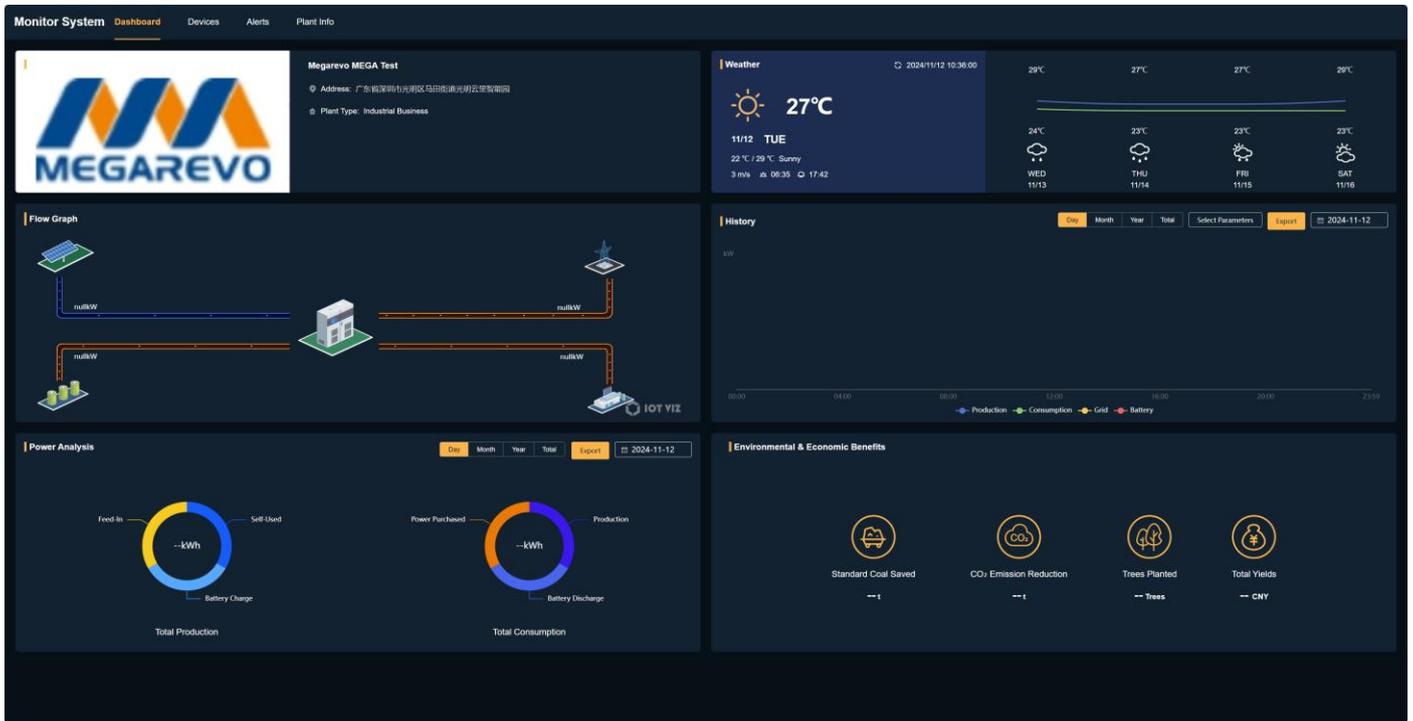
The weather section displays the local weather conditions for the next five days.

The flow diagram shows the current flow and power of the power station system.

The power generation data graph plots daily, monthly, yearly, and total data for each part of the system into charts. You can select parameters and time periods to display and export the required data.

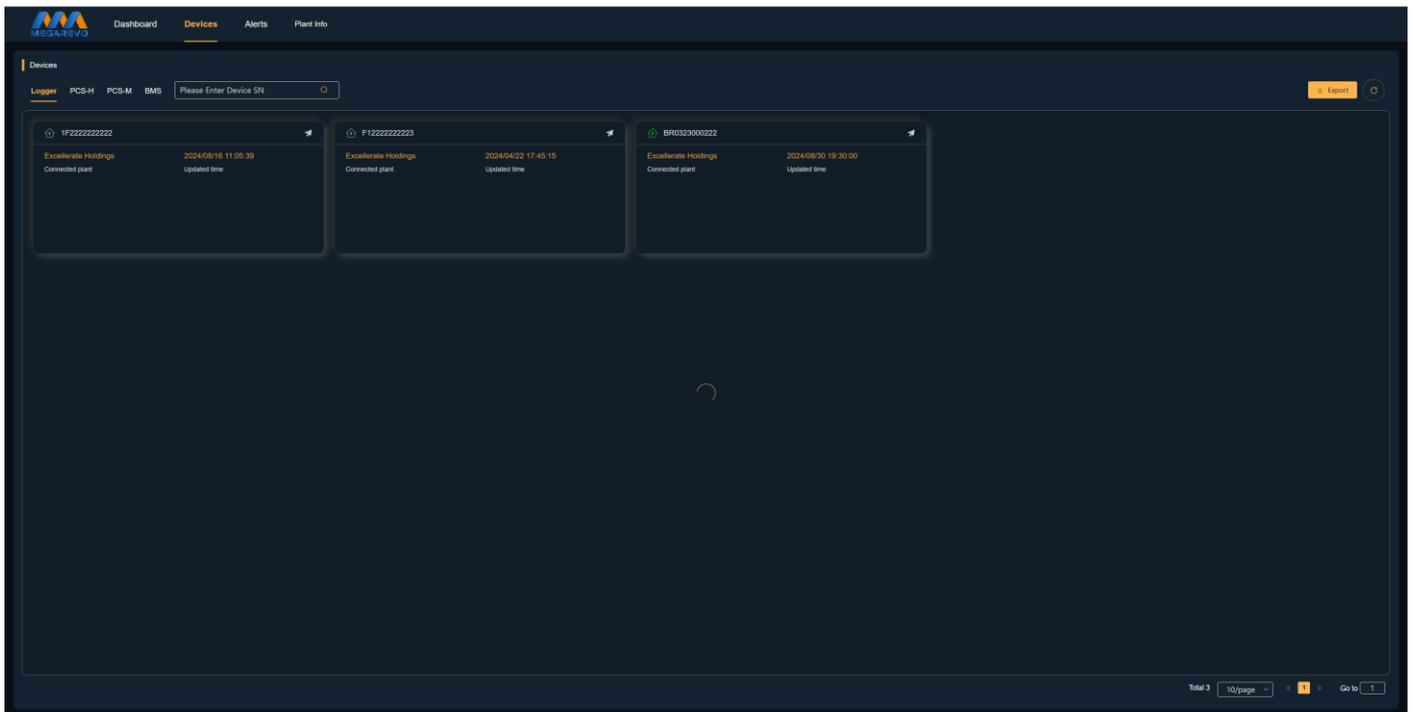
The energy analysis section displays the composition of photovoltaic power generation and the source composition of load power consumption, as well as their proportions. You can select a time period to display and export the required data.

The energy conservation, emission reduction, and income section calculates and analyzes the system's electricity usage based on the income information filled in the power station information.



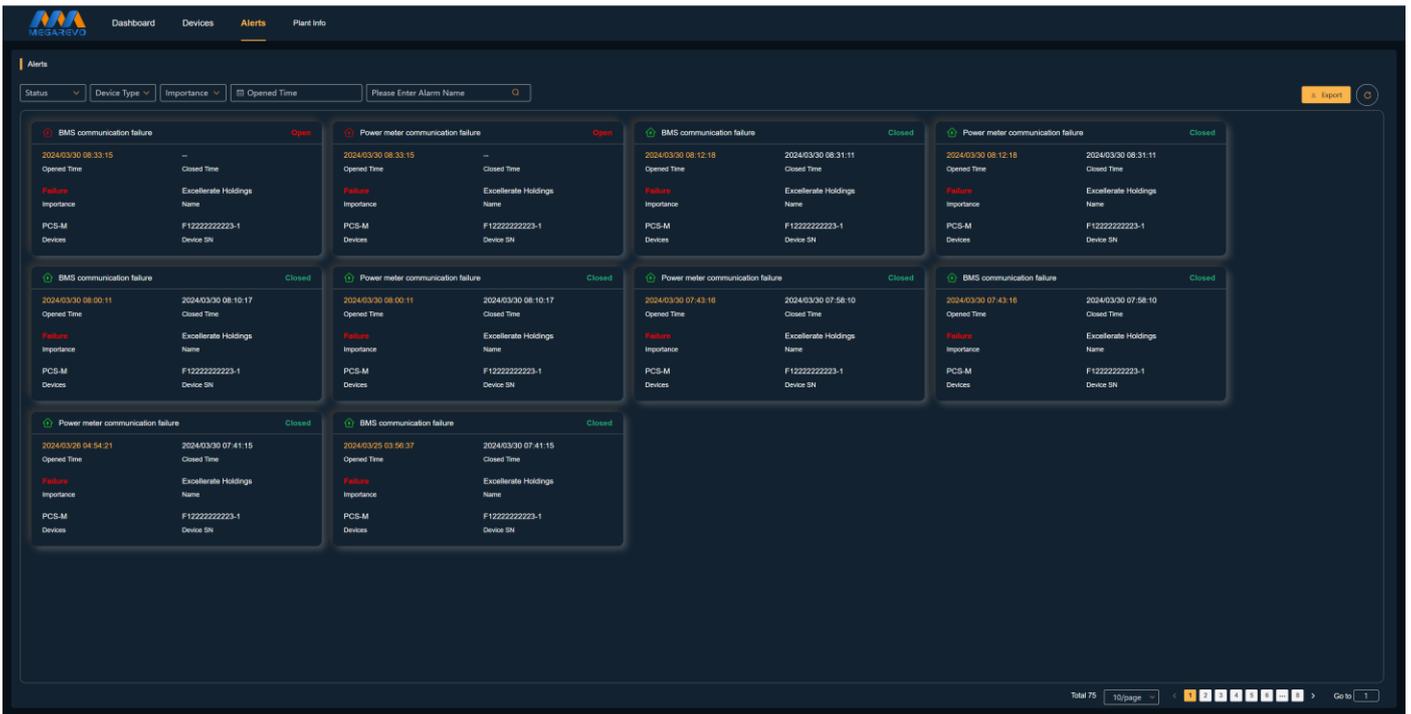
b. Power Station Equipment

The equipment list for a single power station has functions that are basically the same as those of the equipment module.



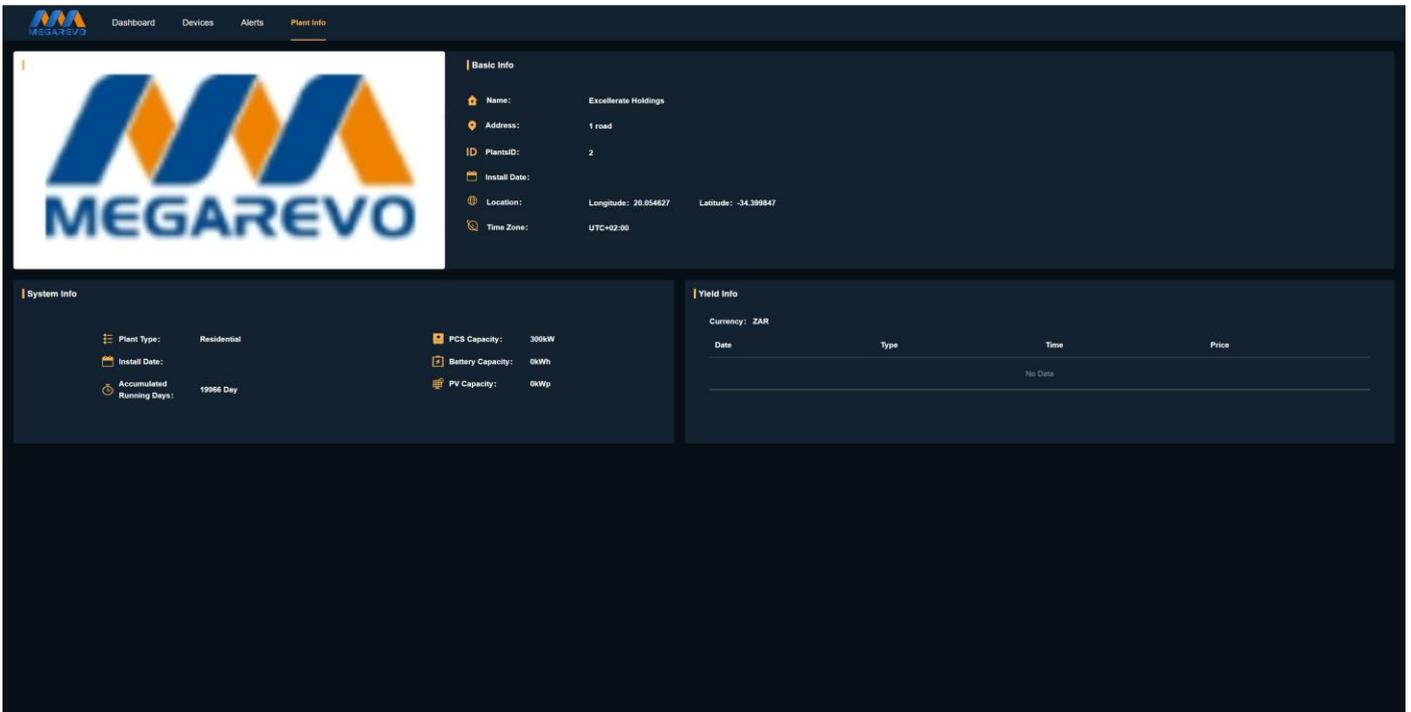
c. Alerts

The alert list for a single power station has functions that are basically the same as those of the alert module.



d. Power Station Information

The power station information for a single power station displays the power station's images, basic information, system information, and income information.



4.4.6 Power Station Equipment

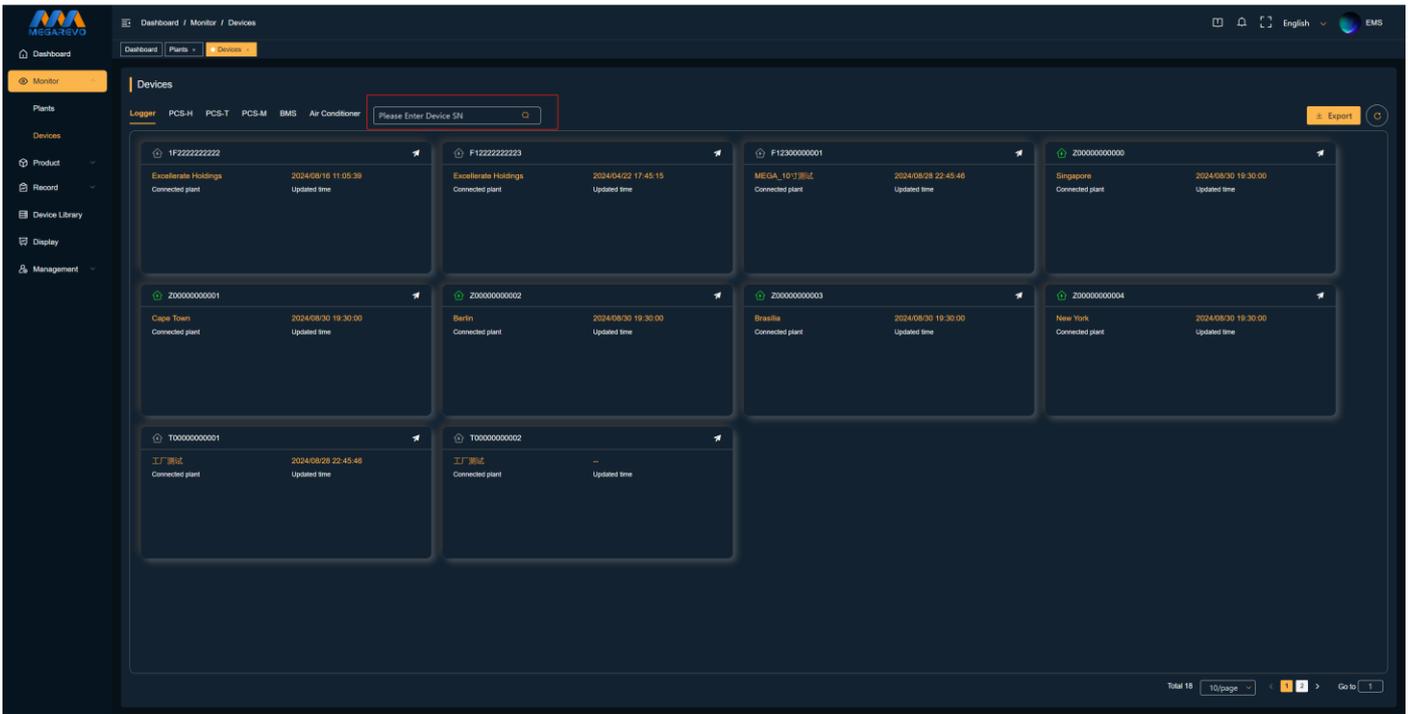
The Equipment section allows you to view the device information and data bound to the authorized power stations. When authorized as an administrator, you can also manage the operational strategies of the authorized devices.

The content displayed in the Device List includes: Device Name, Device SN Code, Network Status, Alert Status, Power Station Belonging, and Update Time.

The content displayed in the Hybrid Inverter List includes: Device Name, Device SN Code, Network Status, Alert Status, Power Station Belonging, Power Generation Capacity, Daily Power Generation, Daily Full Generation Hours, Power Generation Efficiency, Module Capacity, and Update Time.

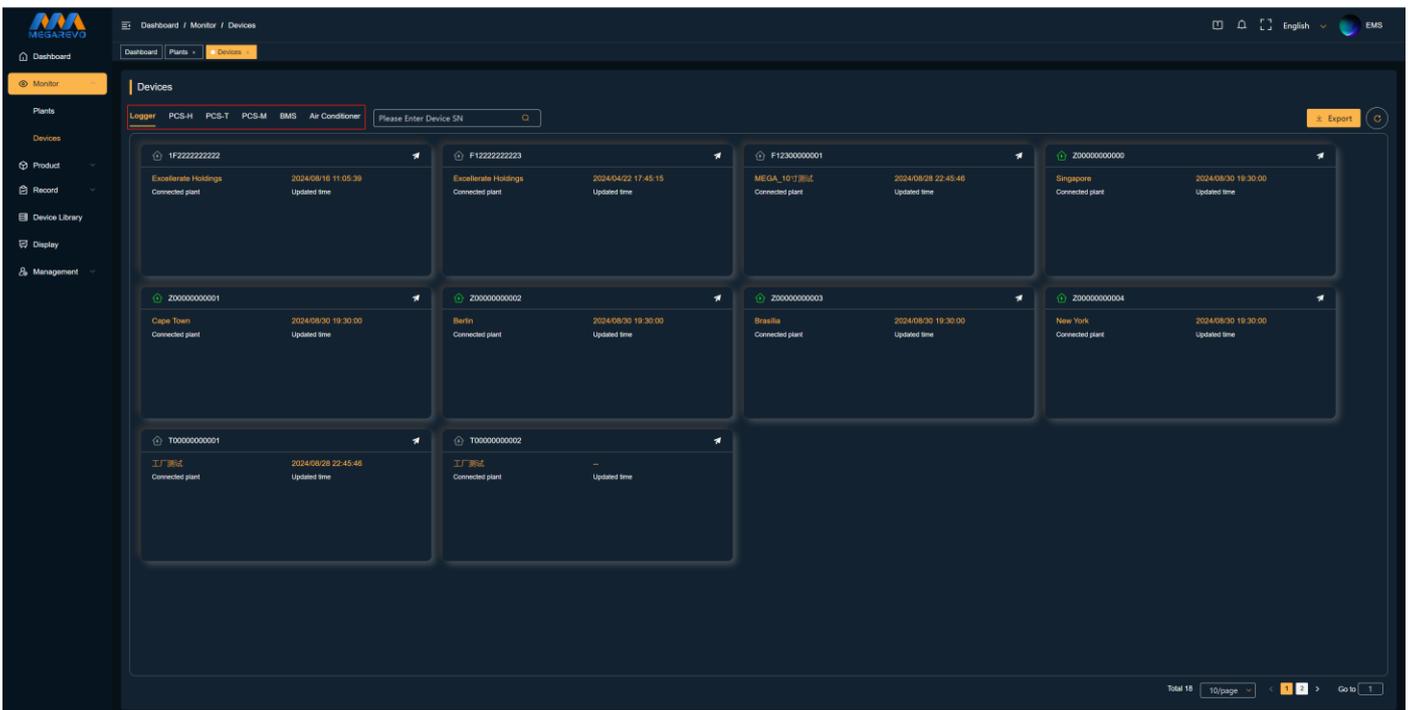
### 1) Device Search Function

When you need to quickly find a specific device, simply enter the device SN code, and the page will provide you with the most relevant results for your search.



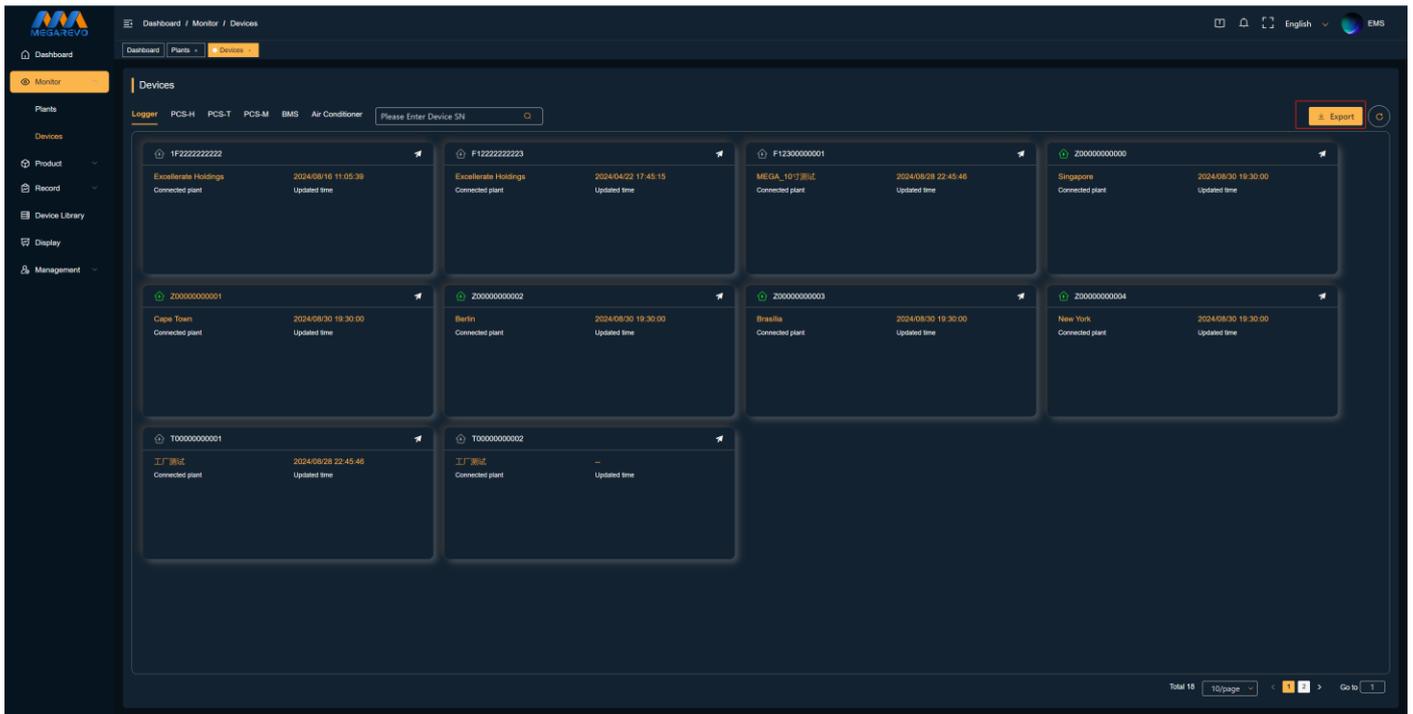
### 2) Device Type Classification

We categorize devices based on their functions into the following categories: Data Collector, Hybrid Inverter (PCS-H), Converter (PCS-T), Modular Converter (PCS-M), and BMS.

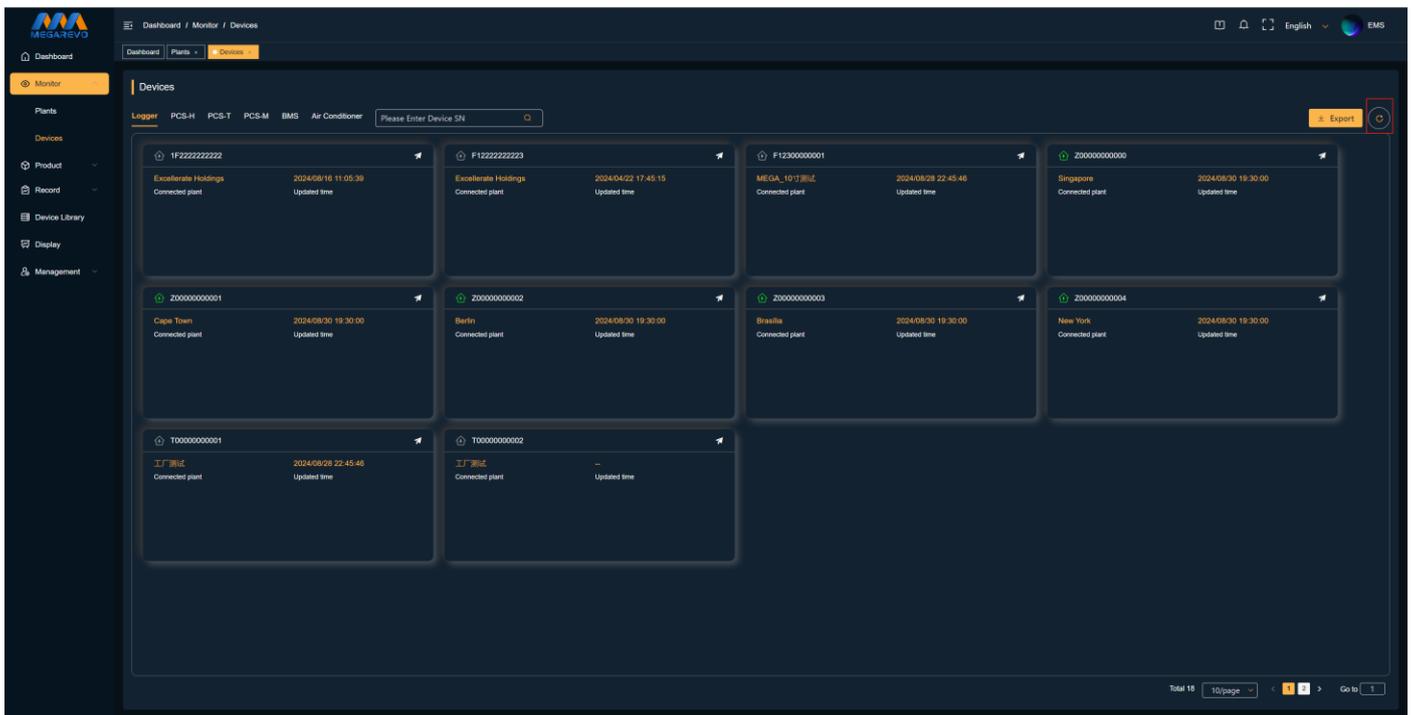


### 3) Data Export Function

Export some important data from the currently filtered and displayed device list. The exported data content is consistent with the content displayed in the list.

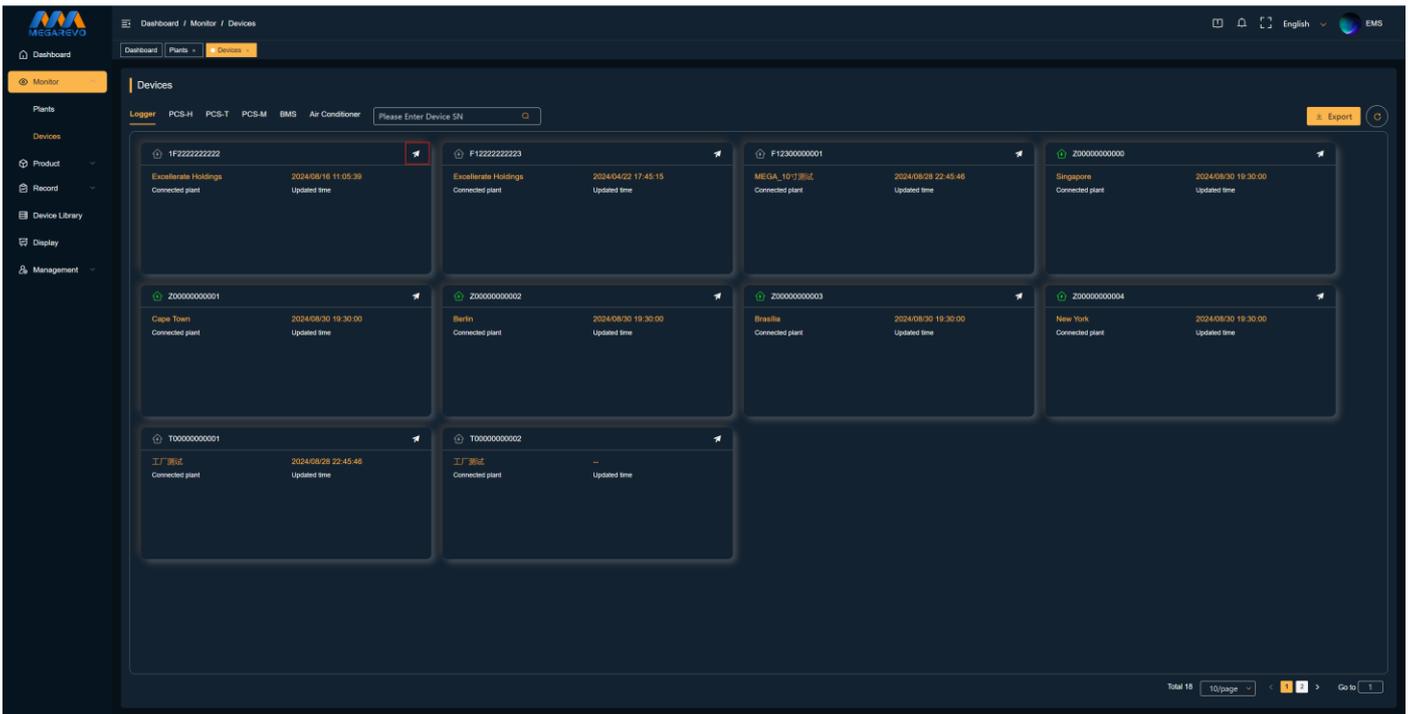


### 4) Page Refresh Function



### 5) Power Station Details Page

Click on the icon button in the top-right corner of the device card to enter the details page of the power station where the device belongs.



### 6) Device Details Page

Clicking on the device SN brings you to the device details page, which is divided into four sections: Data Details, Alarm Information, Parameter Information, and Operating Strategy.

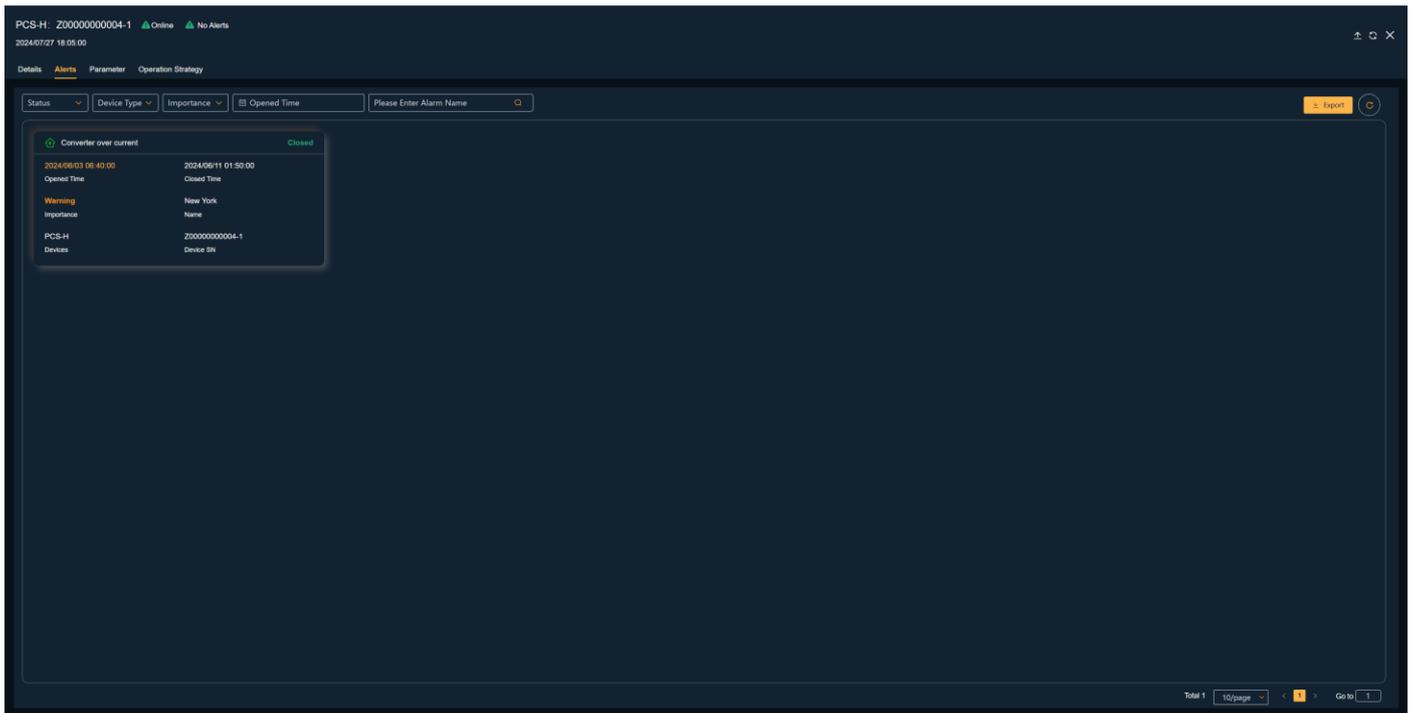
#### a. Data Details

The Data Details section displays the device's power generation data, basic information, and real-time data. The power generation data section visualizes the system's daily, weekly, monthly, yearly, and total data through charts. You can select the desired data and time period to display and export it through parameter and time range selection.



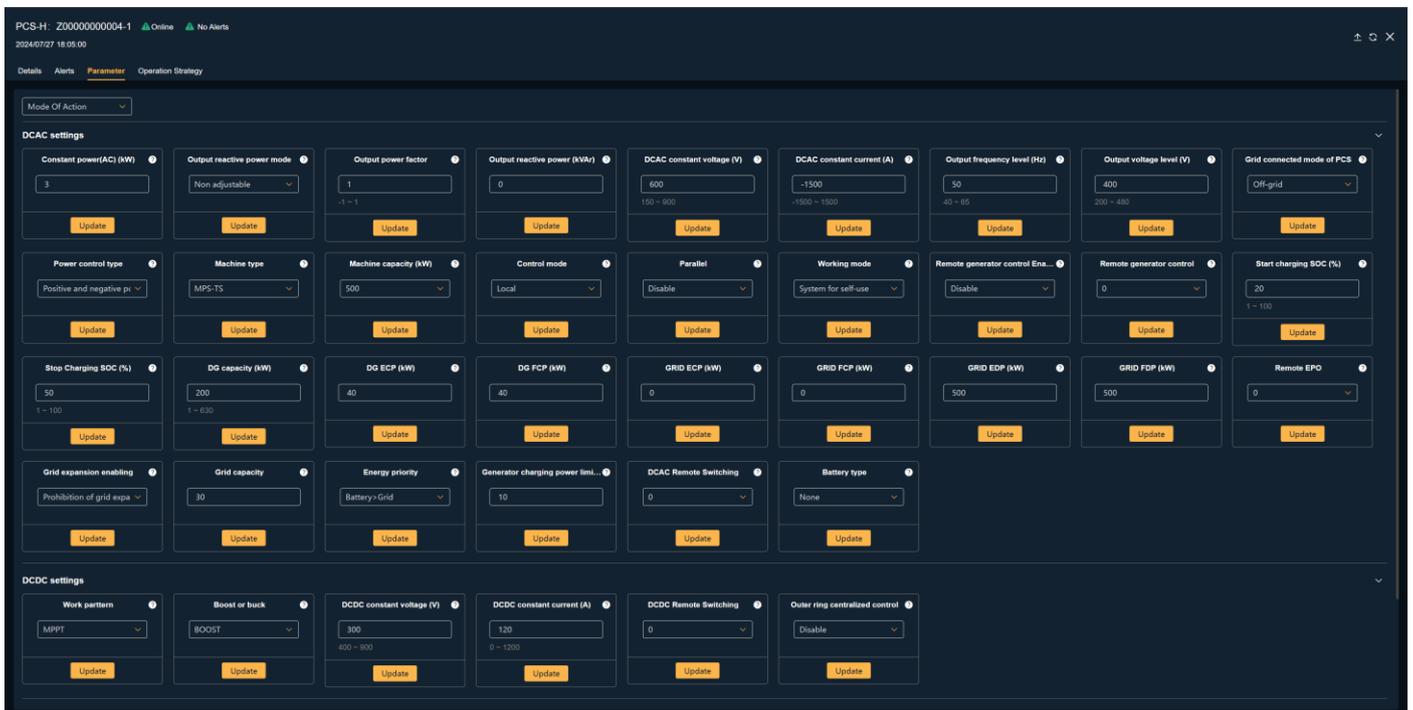
### b. Alarm Information

The alarm list for a single device functions similarly to the alarm module.



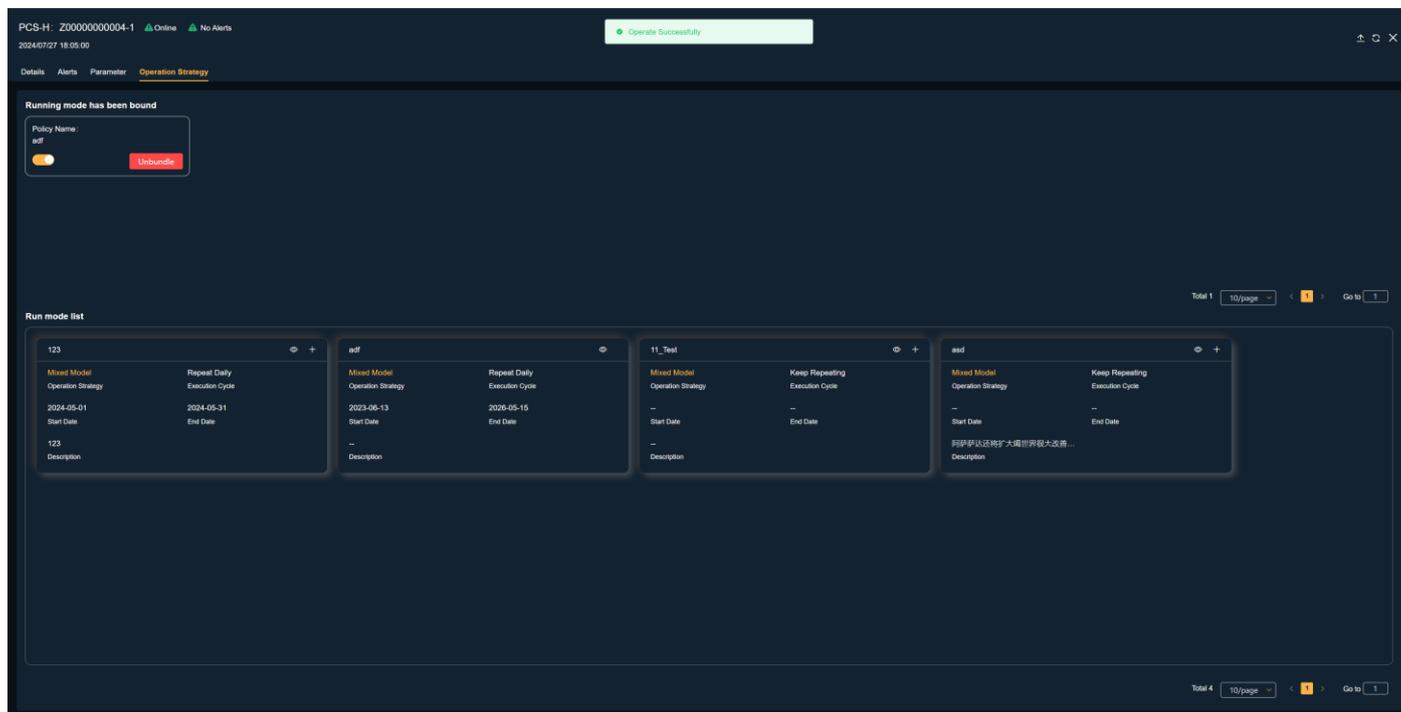
### c. Parameter Information

The Parameter Information section displays the device's parameter settings and allows issuing commands to modify these parameters.



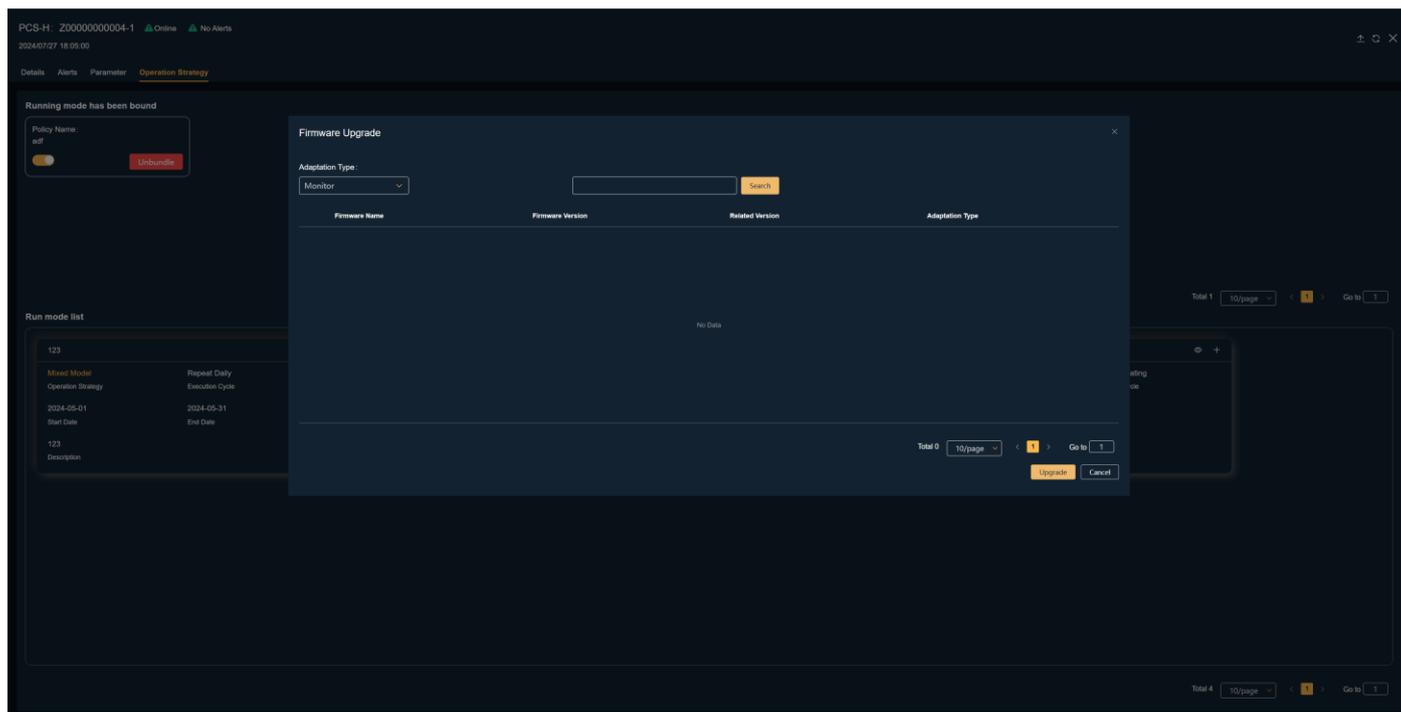
### d. Operating Strategy

The Operating Strategy section displays the operation modes already bound to the device, as well as a list of operation modes created by the agent account. Binding rules for operation modes: Only one type of strategy can be bound, and only one of either the backup power mode or steady-state capacity expansion mode can be bound.



### e. Firmware Upgrade

The firmware upgrade function is used to remotely upgrade the device control program. You can select the appropriate type and search for the required firmware package. The upgrade process displays a progress bar, and the success or failure of the upgrade will be recorded in the operation log section.

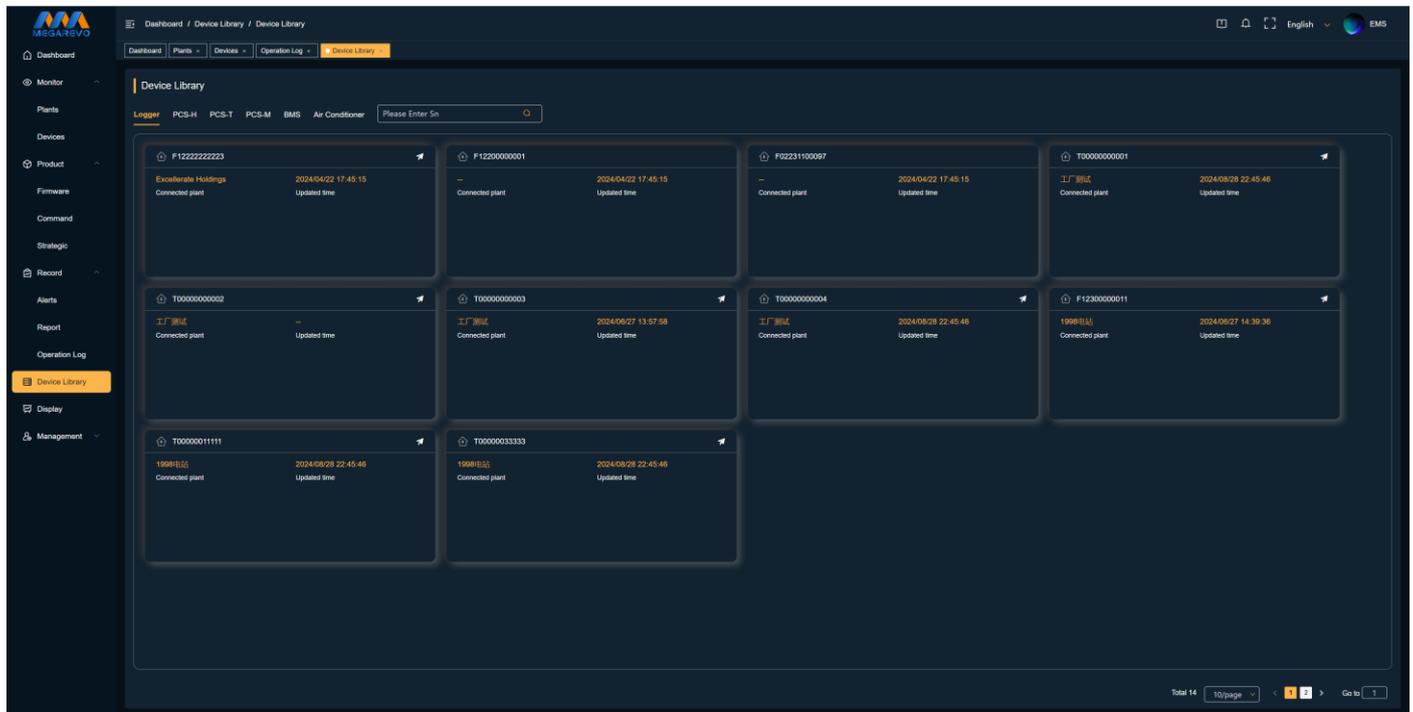


## 4.4.7 Device Library

The Device Library function helps agents manage all purchased devices with unified data.

The Device Library cannot bind operation modes to devices. If you need to set an operation mode, you can do so within the power station device settings.

The Device Library section records all devices purchased by the agent, capturing all data from device access to usage.



### 1) Device Search Function

When you need to quickly find a specific device, enter the device's SN code, and the page will provide the most relevant results for your search.

### 2) Device Type Classification

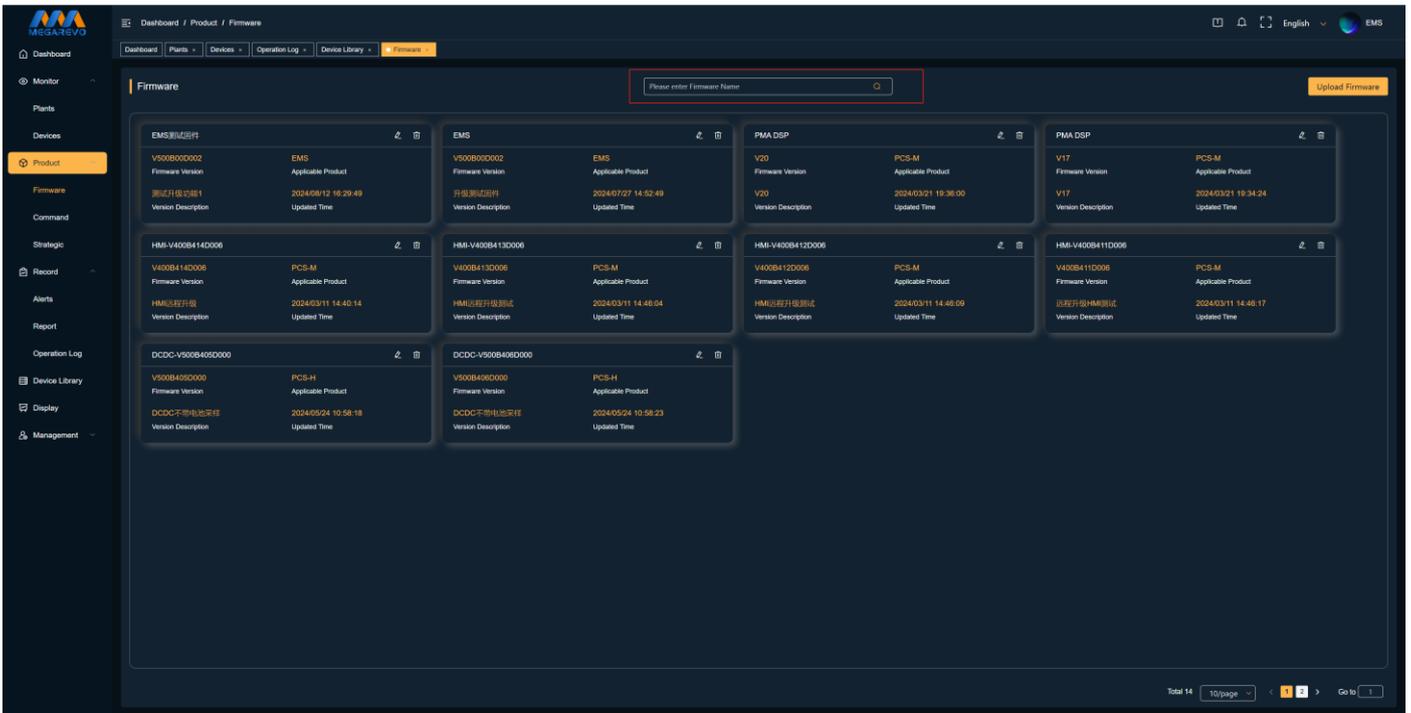
We categorize devices based on their functions into the following categories: Collector, Hybrid Inverter (PCS-H), Converter (PCS-T), Modular Converter (PCS-M), and BMS.

## 4.4.8 Firmware Management

The Firmware Management section features the capability to upload firmware and displays all successfully uploaded firmware information on the homepage. The Firmware Management list displays the following information: Firmware Name, Firmware Version, Applicable Product, Version Details, and Update Date.

### 1) Firmware Search Function

When you need to quickly find the required firmware information, enter the firmware name, and the page will provide the most relevant results for your search.



## 2) Upload Firmware

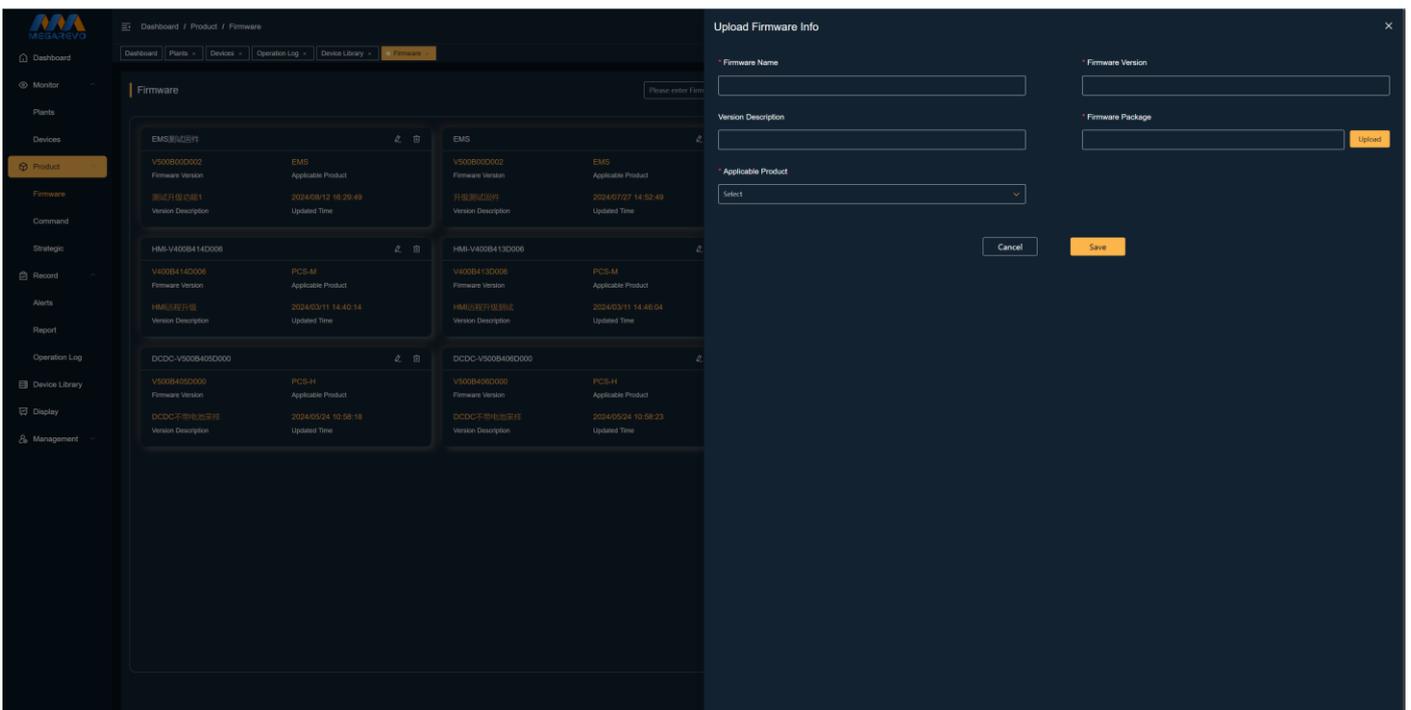
Click on "Upload Firmware" to access the firmware upload information page. Fill in the firmware name, firmware version, version description (optional), firmware upgrade package, applicable product, and adapter type (hidden if no applicable product is selected or if the applicable product is BMS).

Applicable Product Options: Hybrid Inverter (PCS-H), Converter (PCS-T), Modular Converter (PCS-M), BMS, EMS

Adapter Type Options (Hybrid Inverter): Monitor, DCAC, DCDC

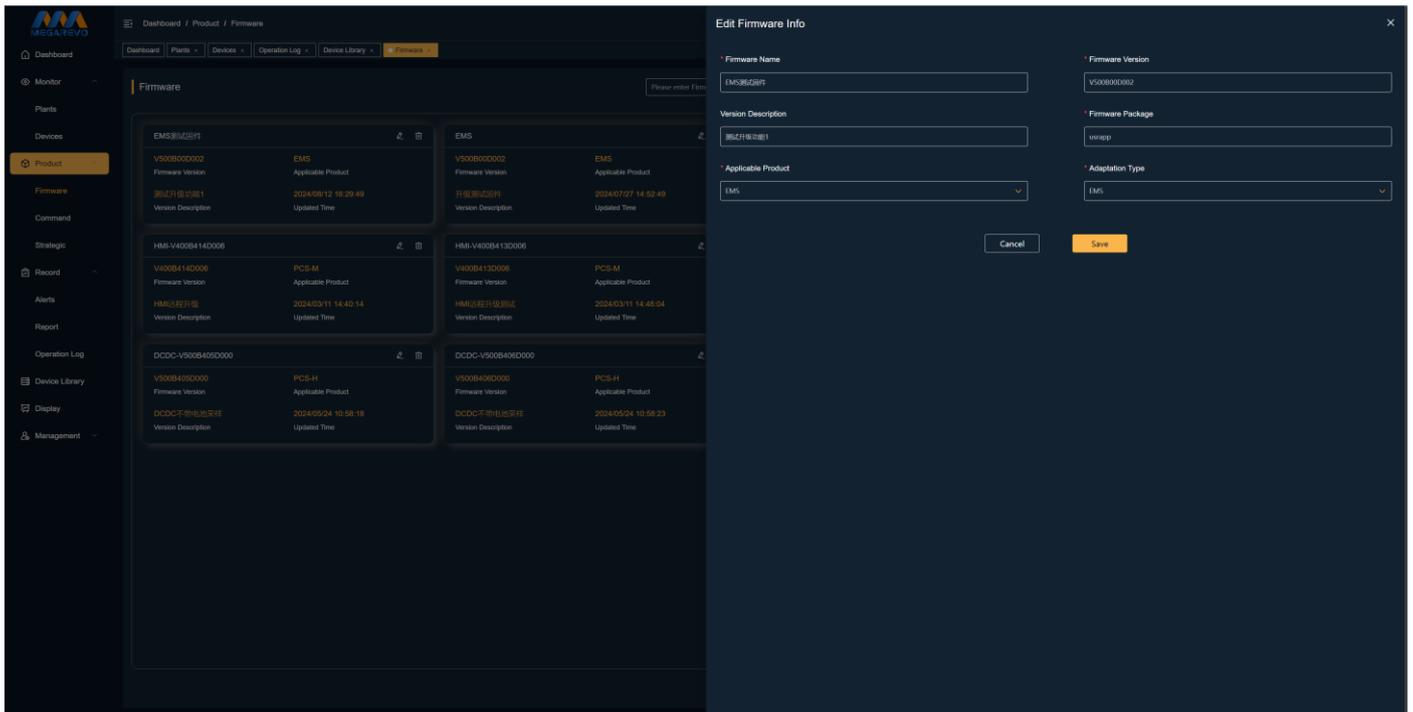
Adapter Type Options (Converter, Modular Converter): Monitor, DSP

Adapter Type Options (EMS): EMS



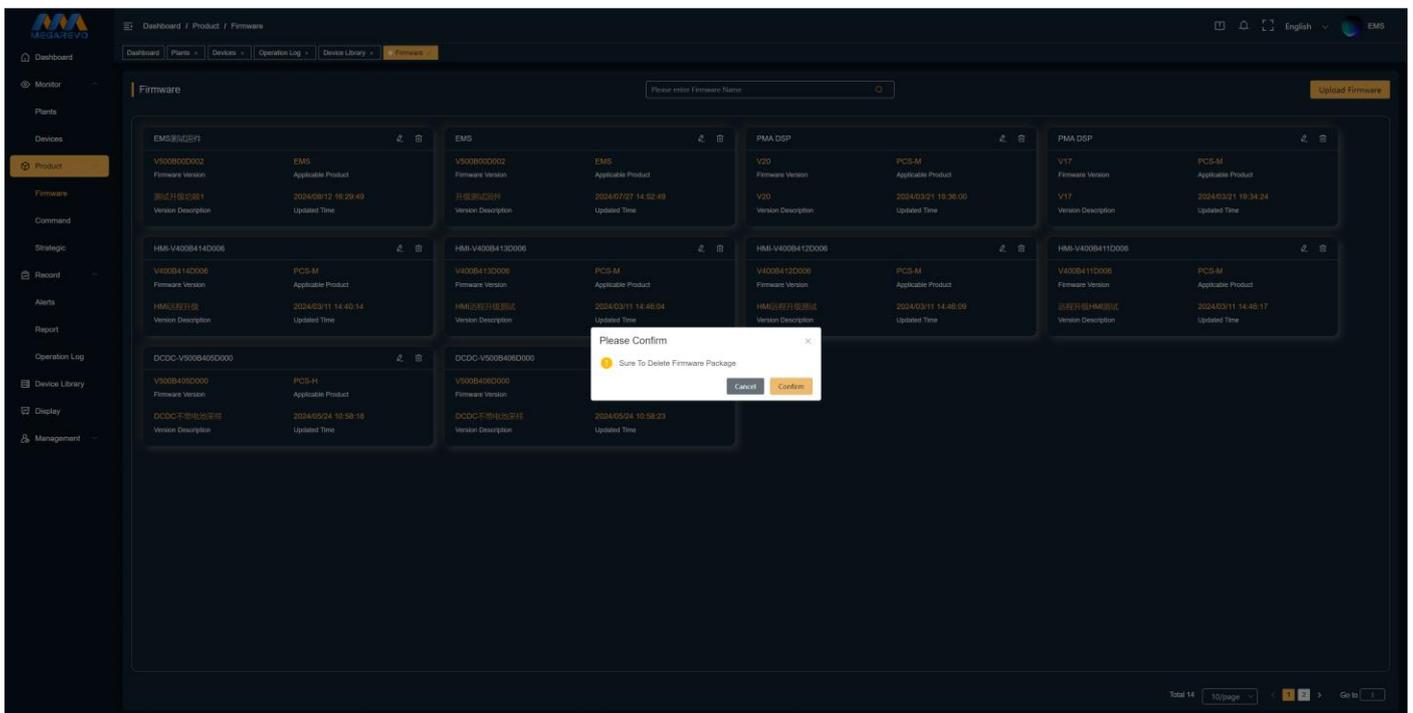
### 3) Edit Firmware

Edit the successfully uploaded firmware information, including: firmware name, version description, applicable product, and adapter type.



### 4) Delete Firmware

Delete the successfully uploaded firmware and its associated information. Note that once the deletion is performed, it cannot be undone.



## 4.4.9 Command Management

The Command Management section categorizes, summarizes, and manages various command information data set in different devices. After authorizing commands to end-users and installers, the authorized accounts can issue those commands to the devices under their respective power stations, supporting batch authorization.

Device Categories: Hybrid Inverter, Converter, Modular Converter, BMS.

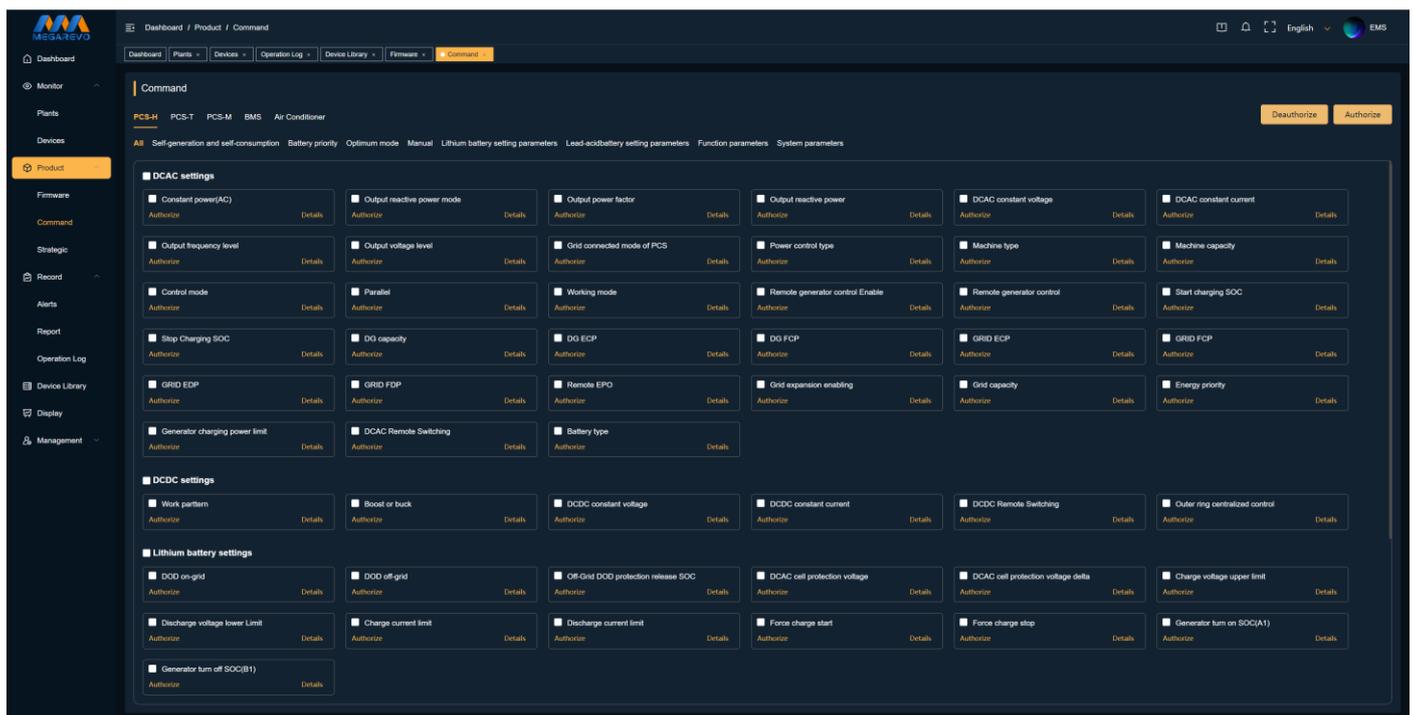
### 1) Authorization and De-authorization

Click the authorization button for the command that requires authorization, search for the authorization target and proceed with the authorization (only end-users and installers who have been authorized for the power stations under their names can be searched). After successful authorization, end-users and installers will have the operational permission for that command.

To perform batch authorization, select the commands that require authorization and click the authorization button in the upper right corner of the page.

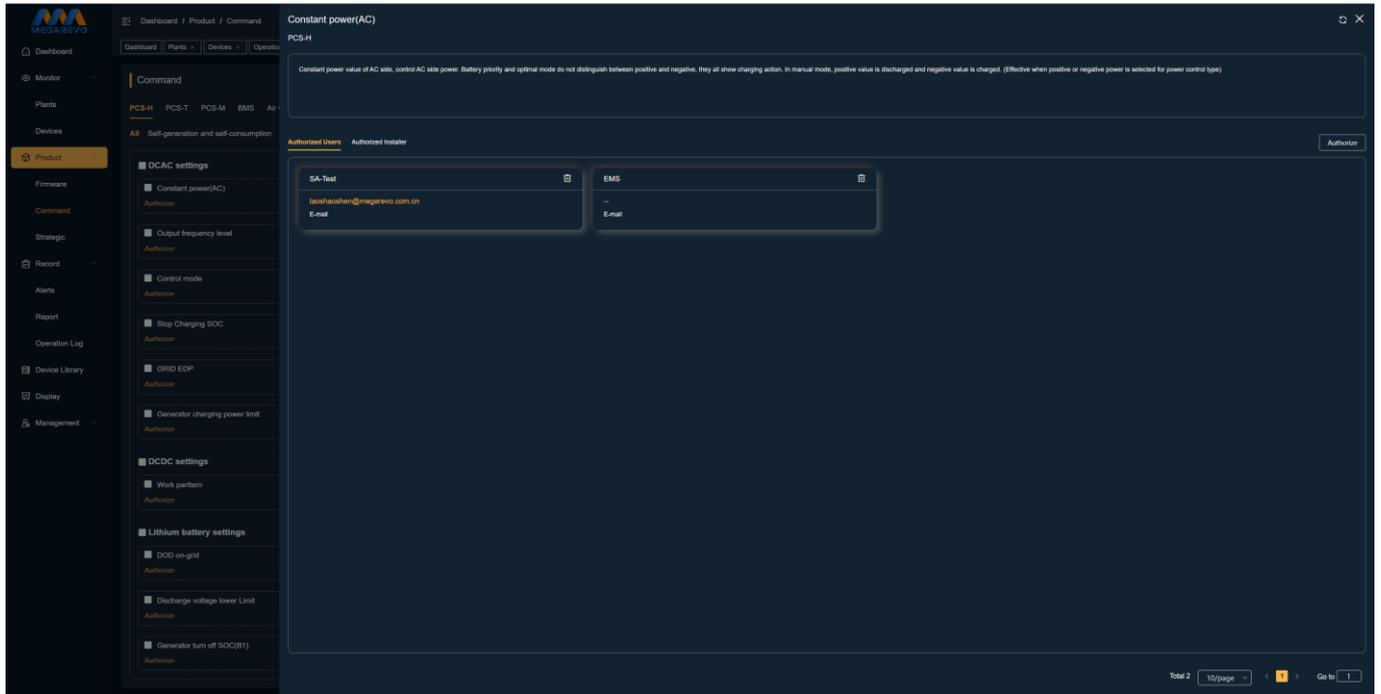
To de-authorize, click on "Details," select the user or installer that needs to be de-authorized, click on the de-authorization icon, and confirm the de-authorization.

The operation for batch de-authorization is similar to that of batch authorization.



## 2) Authorization Details Page

Displays the list of authorized users and installers, showing the following information: Name, Email. Supports the operations of canceling authorization and adding new authorizations.



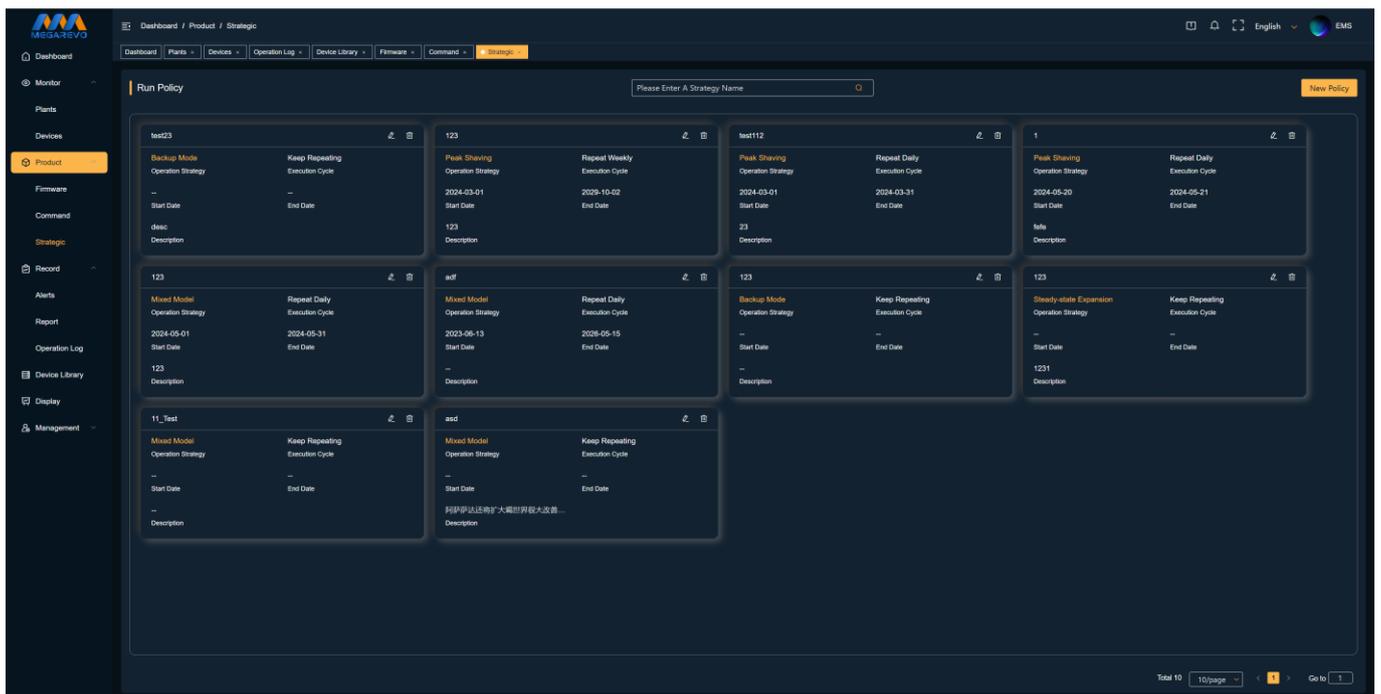
## 4.4.10 Policy Management

The Policy Template feature enables the configuration of device operation policies, allowing for the customization of various operation modes based on actual needs to achieve optimal power station performance.

The Operation Policy List displays the following information: Policy Name, Execution Cycle, Start Date, End Date, Template Description, Operation Policy.

### 1) Policy Search Function

When you need to quickly find a specific operation policy, enter the policy name, and the page will provide the most relevant results for your search.



## 2) Create New Policy

Click "Create New Policy" to enter the new policy creation page. Fill in the Policy Name, Template Description (optional), select the Execution Cycle, Start Date, End Date, Policy Template, and configure the Operation Policy.

Execution Cycle Options: Repeat Daily, Repeat Weekly, Long-Term

Policy Template Options: Peak Shaving and Load Shifting, Backup Power Mode, Steady-State Expansion, Hybrid Mode

Peak Shaving and Load Shifting Configuration: Start Time, End Time, Control Type (Standby, Charge, Discharge), Scheduled Power, Target SOC

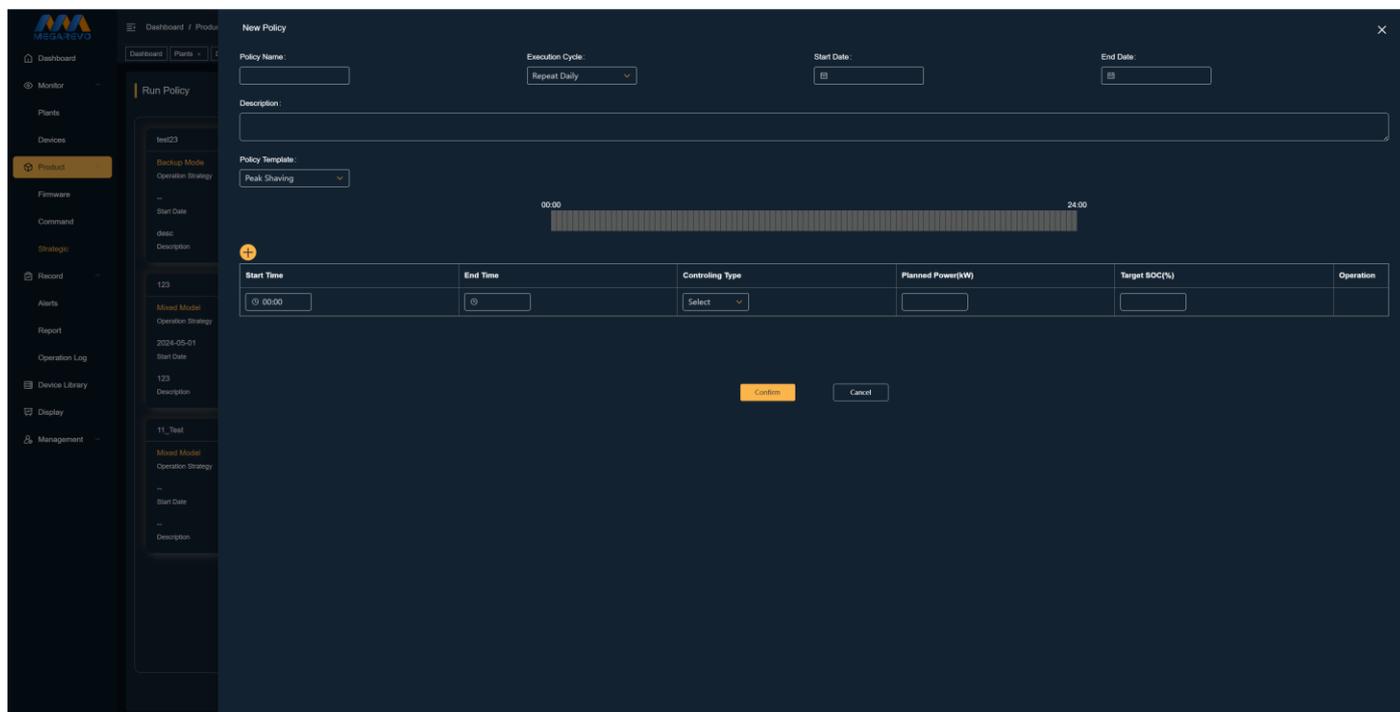
Backup Power Mode Configuration: Start Charging SOC, Stop Charging SOC, Start Charging Cell Voltage, Stop Charging Cell Voltage, Start Charging Total Voltage, Stop Charging Total Voltage, Charging Power

Steady-State Expansion Configuration: Grid Capacity, Start Charging SOC, Stop Charging SOC, End Discharging SOC

Hybrid Mode Configuration: Peak, Flat, and Off-Peak (Peak, Flat, Off-Peak), Start Time, End Time, Function (Economy Mode, Peak Shaving and Load Shifting), Scheduled Power, Target SOC, Generator Action (None, Generator On, Generator Off)

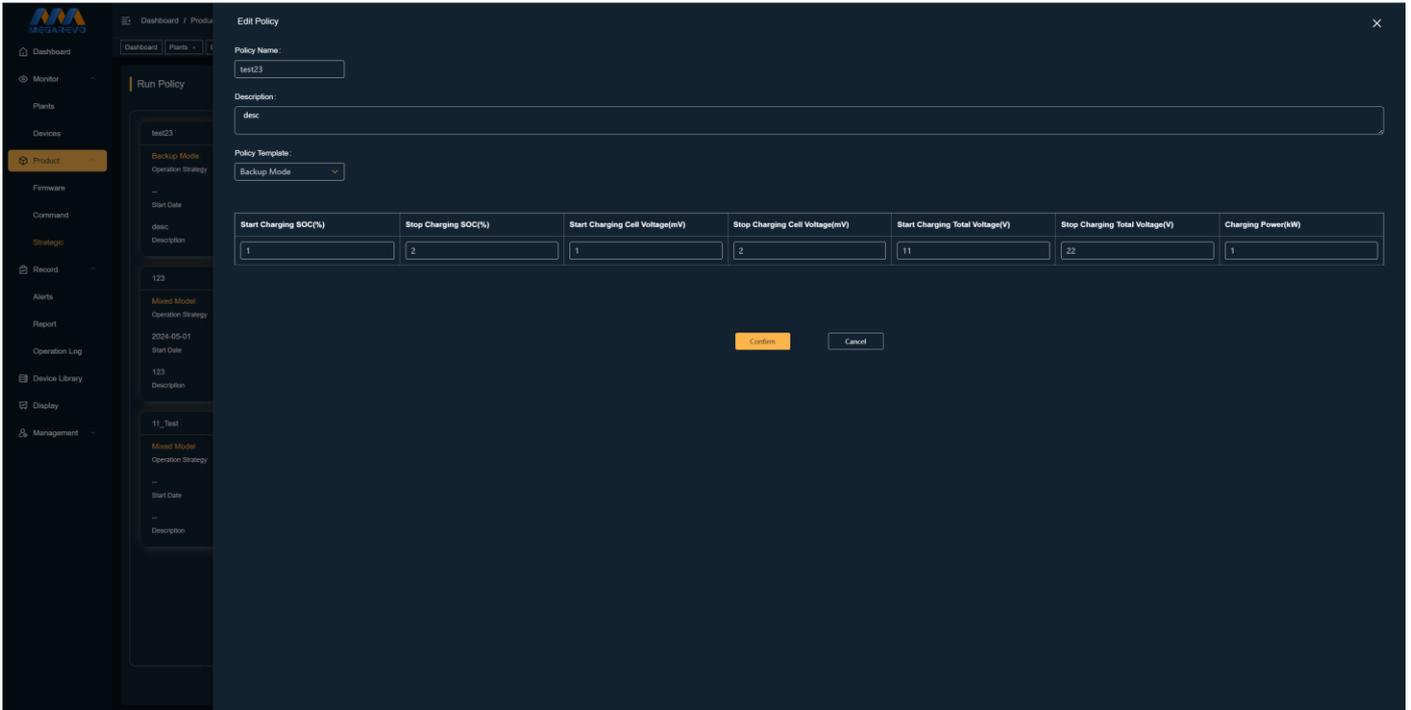
a. Add 24-Hour Operation Policy (Only available for Peak Shaving and Load Shifting and Hybrid Mode)

b. Delete 24-Hour Operation Policy (Only available for Peak Shaving and Load Shifting and Hybrid Mode)



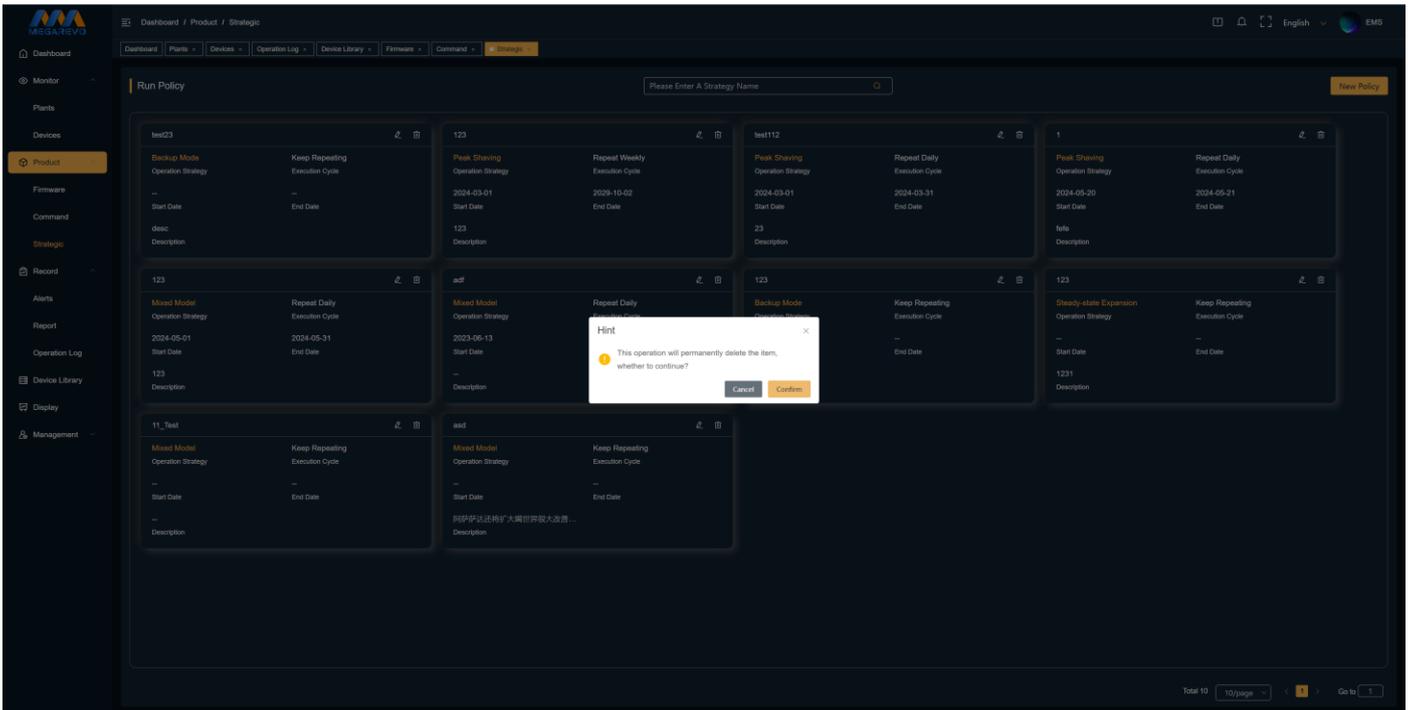
### 3) Edit Policy

Edit the successfully created operation policy.



### 4) Delete Policy

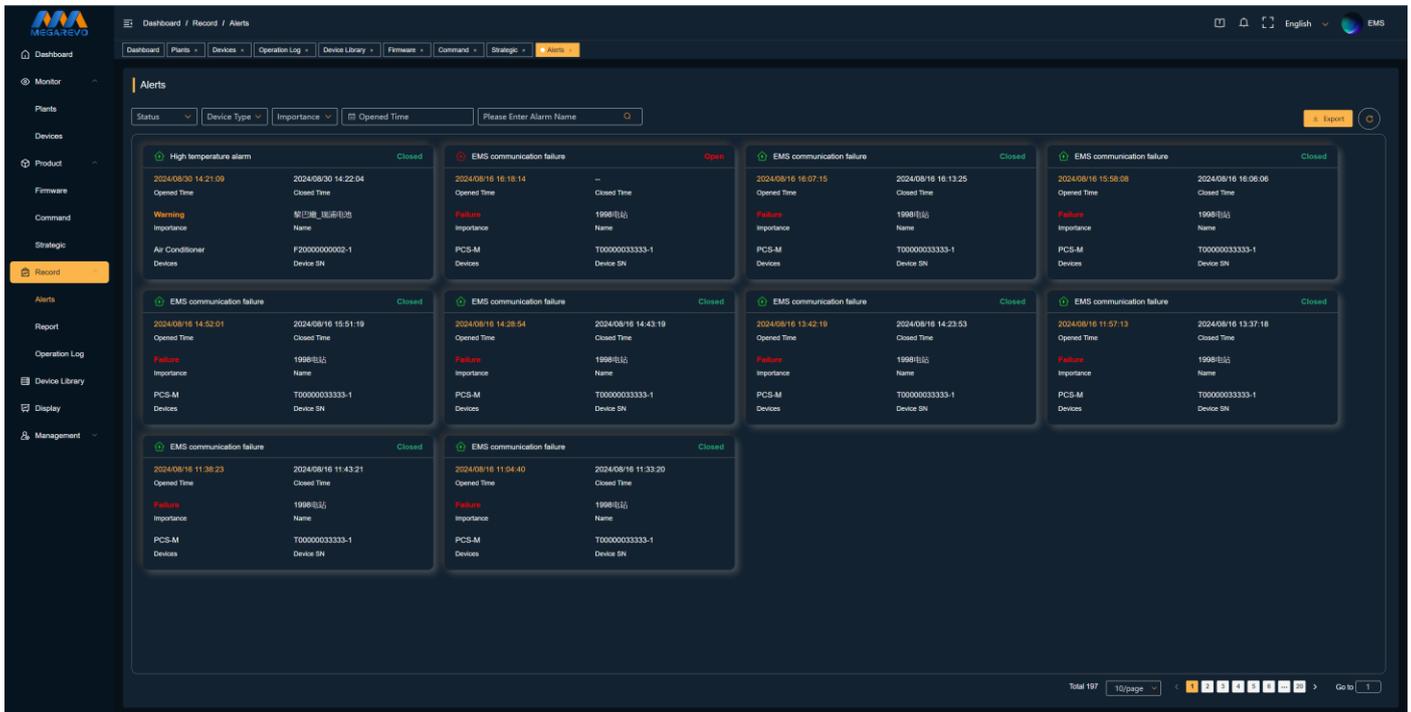
Delete the successfully created operation policy. Once the deletion is executed, it cannot be undone.



## 4.4.11 Alert

The Alert module displays the alert information of authorized power stations.

Alert List Display Content: Alert Name, Alert Start Time, Recovery Time, Alert Status, Level, Power Station Name, Device.



### 1) Alarm search function

Alarm name search: When you need to quickly find a specific alarm, enter the alarm name, and the page will provide the most relevant results for your search.

Alarm status filtering: Filter alarms based on whether they have been restored after occurrence, with filtering conditions: All, In Progress, and Restored.

Alarm level filtering: Filter alarms based on their severity levels, with filtering conditions: All, Reminder, Alarm, and Failure.

Alarm time filtering: Filter alarms by selecting the time of occurrence, allowing you to view a week's worth of alarm data.

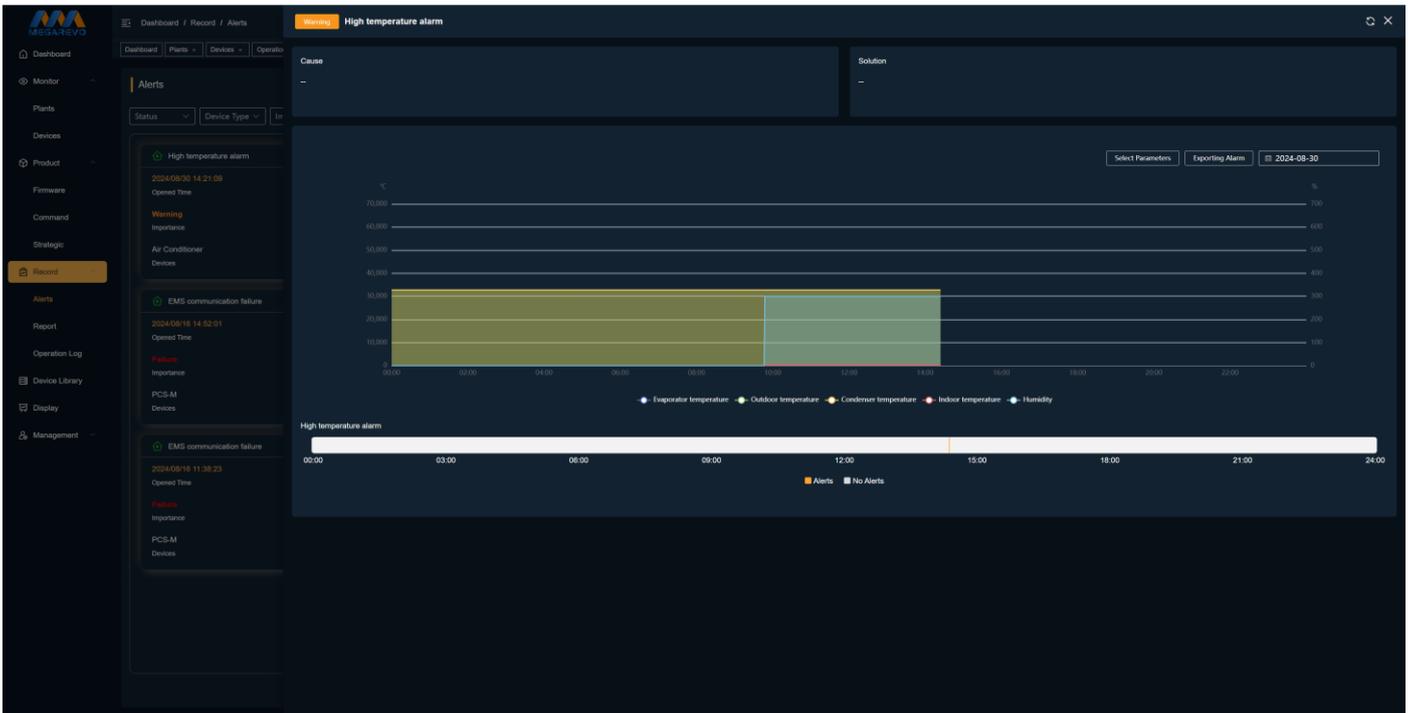
### 2) Data export function

Export some important data from the currently filtered and displayed device list. The exported data content is consistent with the content displayed in the list.

### 3) Page refresh function

### 4) Alarm details page

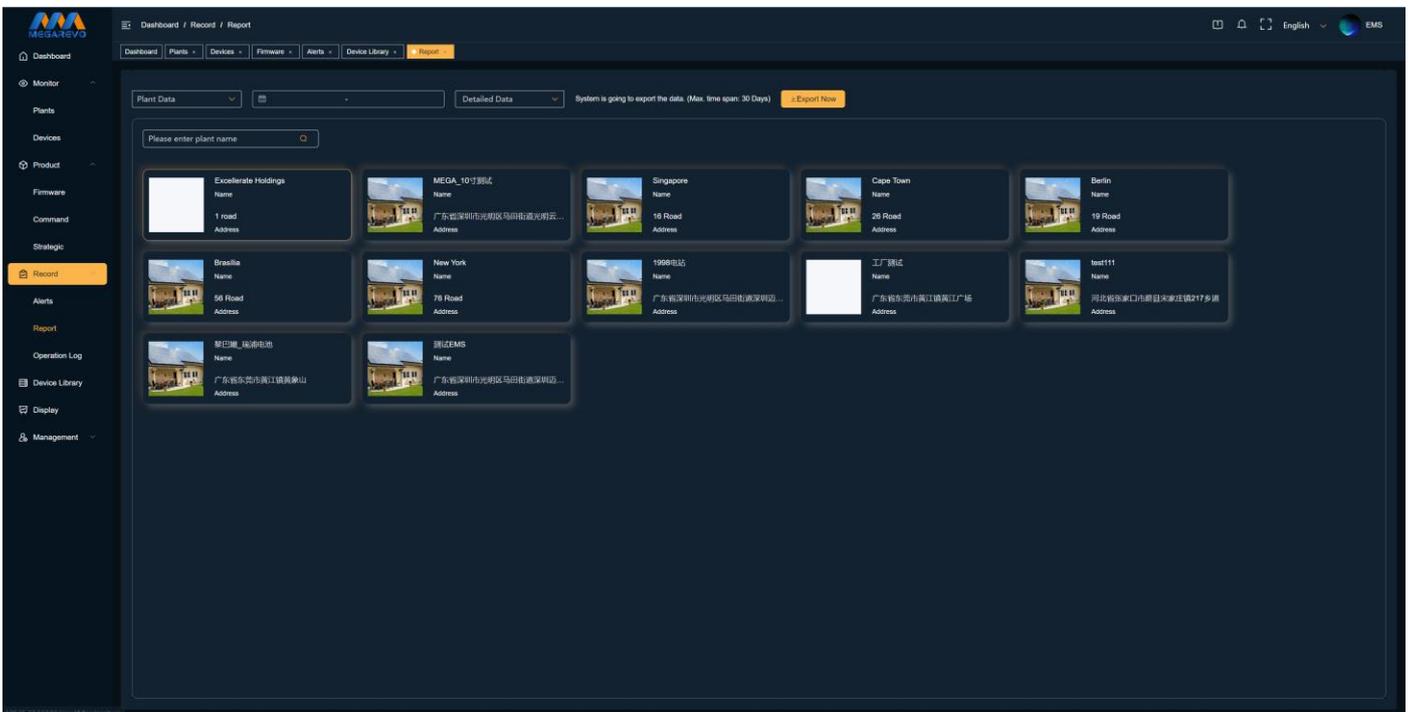
Click on the alarm name to enter the alarm details page, which displays the current alarm's cause, resolution, and device data during the alarm period. The data information is presented in a chart, and you can select the desired data and export it by selecting parameters and time periods.

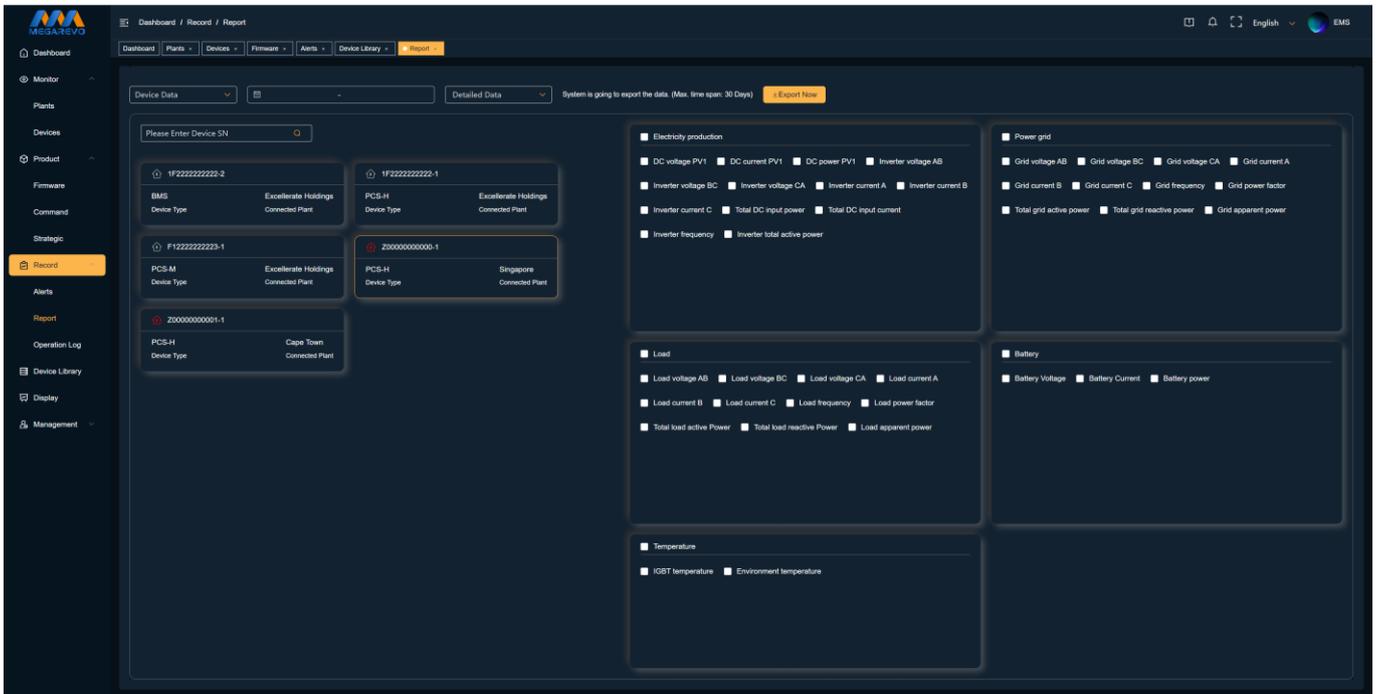


#### 4.4.12 Report

The report function is used to statistically present the basic parameters and power generation status of power stations and equipment over a past period of time. Reports provide a concrete representation of the business data of power stations and equipment.

After selecting the content you wish to export, click "Export Now" to download the Excel report to your browser.

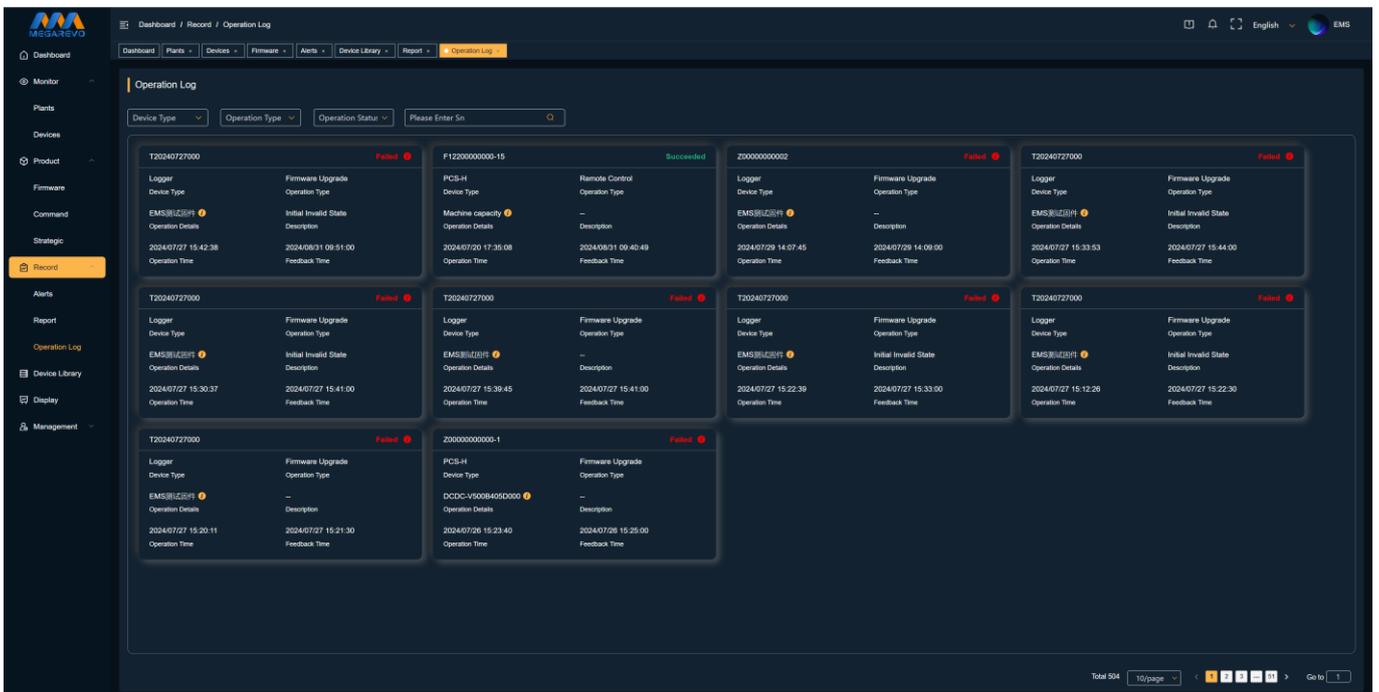




### 4.4.13 Operation Logs

The Operation Records section displays log records of command dispatch and firmware upgrades, enabling you to check whether the command dispatch and firmware upgrade operations have been successful, thereby managing devices more efficiently.

The content displayed in the operation log list includes: device SN code, device type, operation type, operation details, description, failure reason, operator, operation time, and feedback time.



#### 1) Function Description

- a. Search: When you need to quickly find the operation records of a specific device, enter the device's SN code, and the page will provide you with the most relevant results for your search.
- b. Device Type: Filter by different types of devices recorded in the logs. Filtering conditions include: All, Hybrid Inverter (PCS-H), Converter (PCS-T), Modular Converter (PCS-M), BMS.

c. Operation type: Filter by the operation type recorded in the log. Filtering conditions: All, parameter command, firmware upgrade.

d. Operation status: Filter by the completion status of the operation command. Filtering conditions:  
All: All operation records

Sending: Records of parameter commands being sent

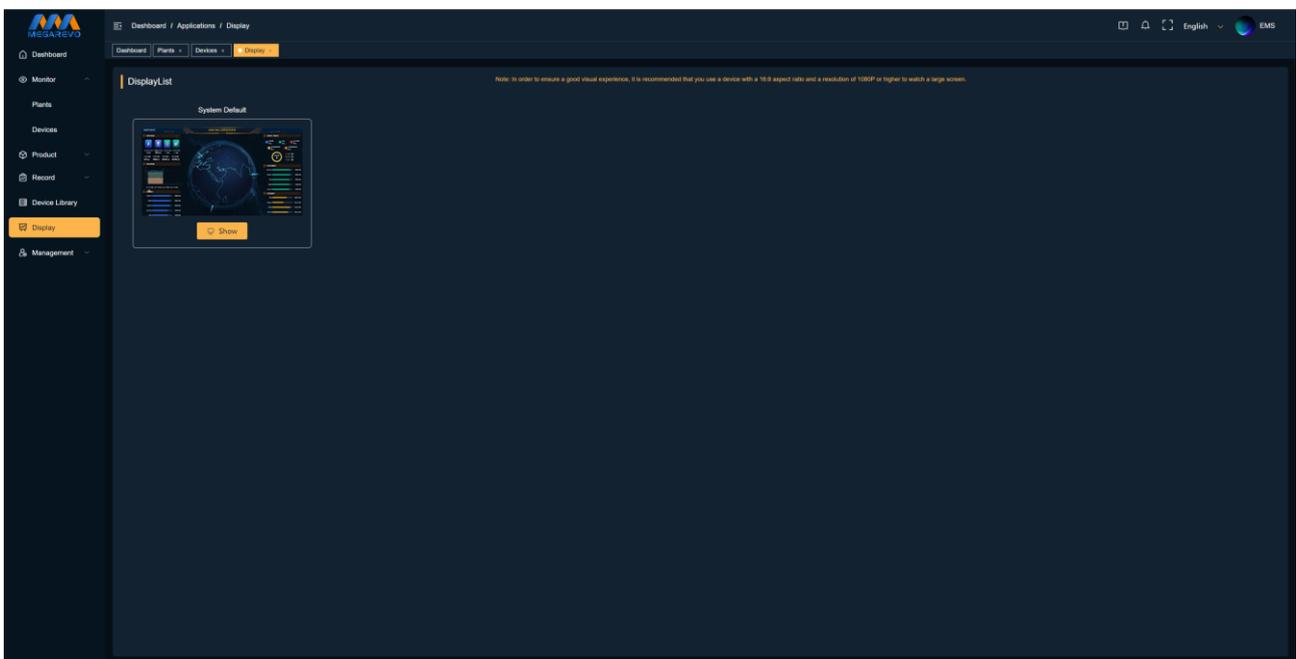
Upgrading: Records of firmware upgrades in progress

Failed: Records of failed parameter command sending and firmware upgrades

Succeeded: Records of successful parameter command sending and firmware upgrades.

#### 4.4.14 Large Screen Display

The large screen function provides agents with intuitive and clear power station data display, helping them to fully understand the operation of the power station and make timely decisions. The display content is basically the same as the data overview, presenting the distribution of power stations on the globe.

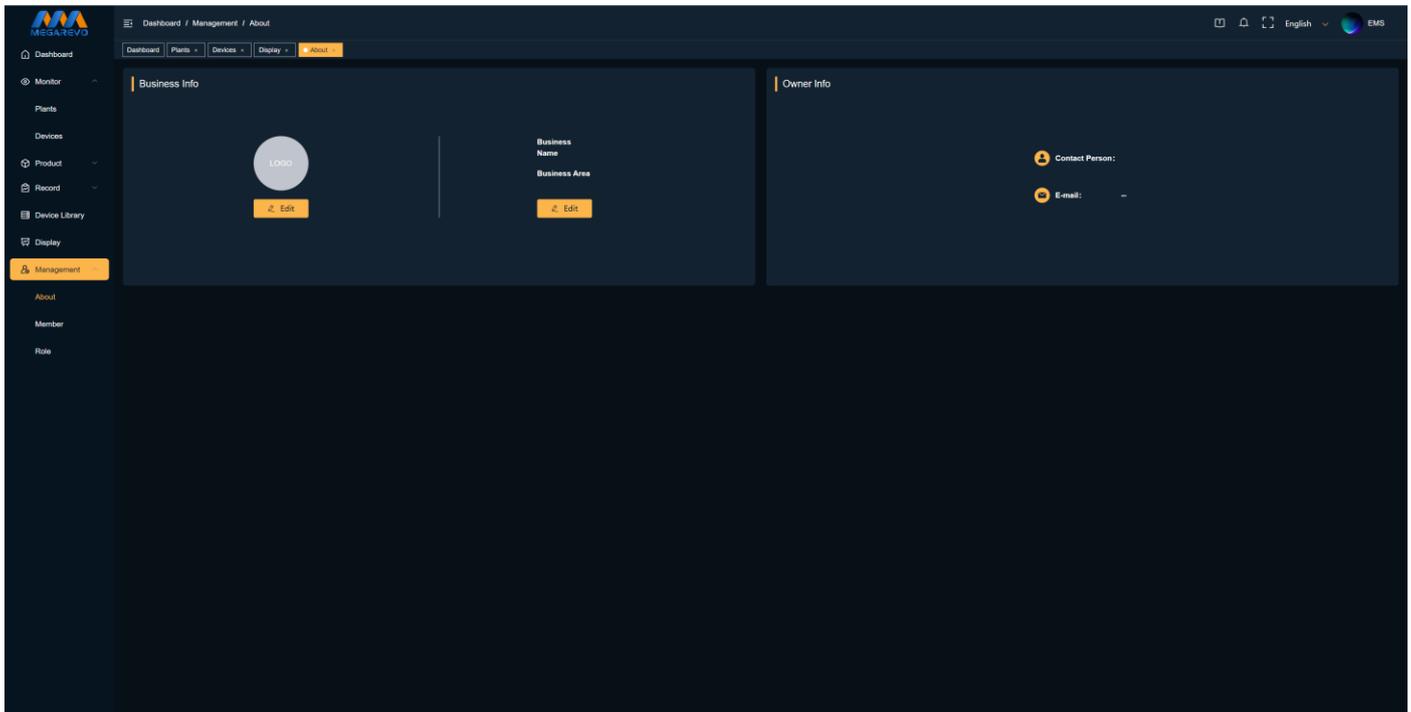


Display:



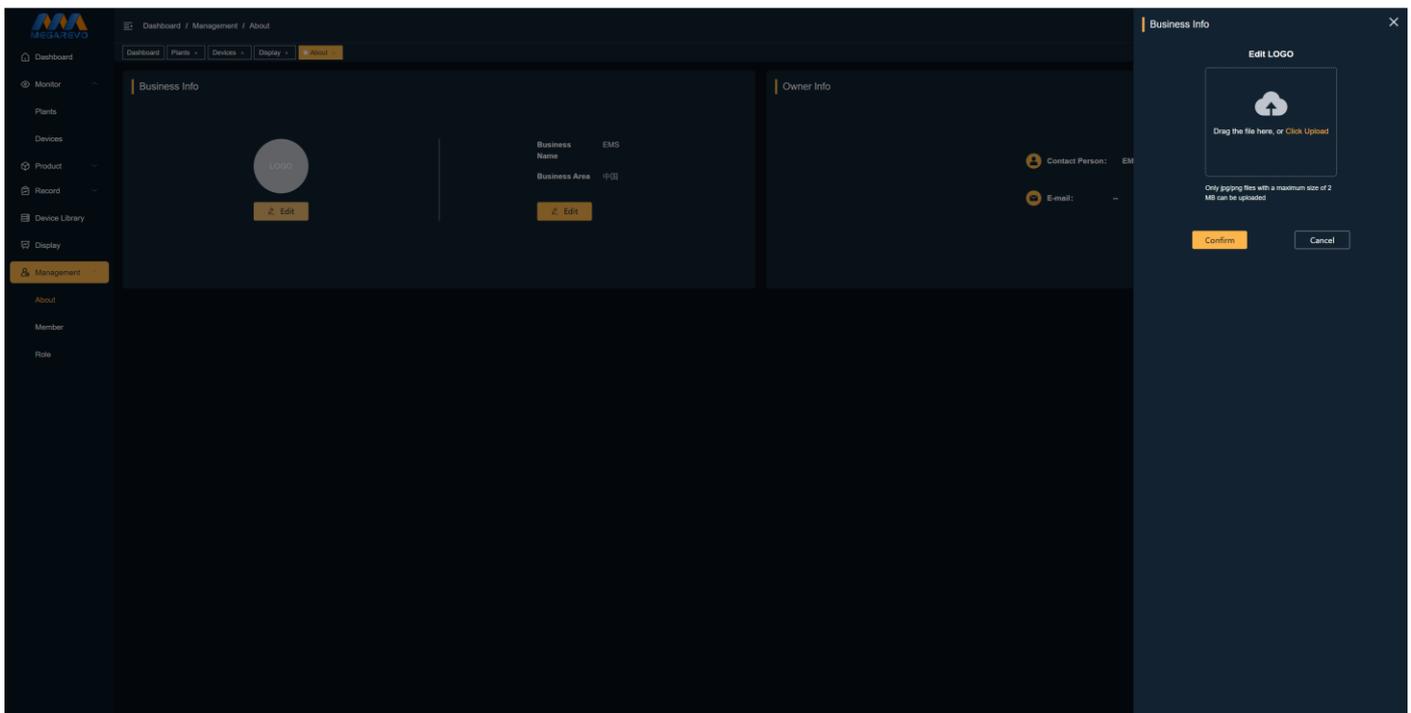
#### 4.4.15 About the company

The company section displays company information and contact information. The company information shows the company logo, company name, and company location, which can be edited. The contact information displays the contact name and email.



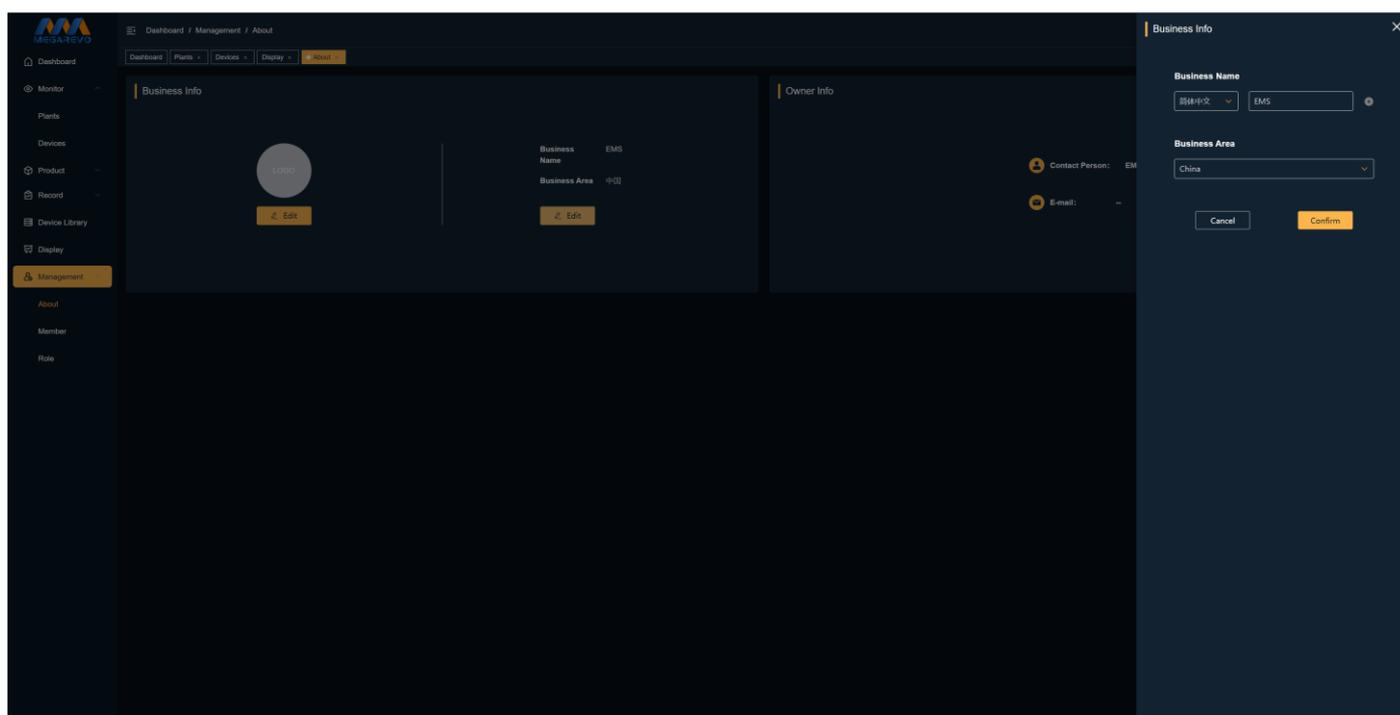
##### 1) Edit Business Logo

Click the edit button below the logo, and an edit pop-up window for the business logo will appear on the right side of the page. Select the logo you want to upload, edit the image, and then upload it.



## 2) Edit Business Information

Click the edit button below the business information, then modify or add new business information, and upload it.

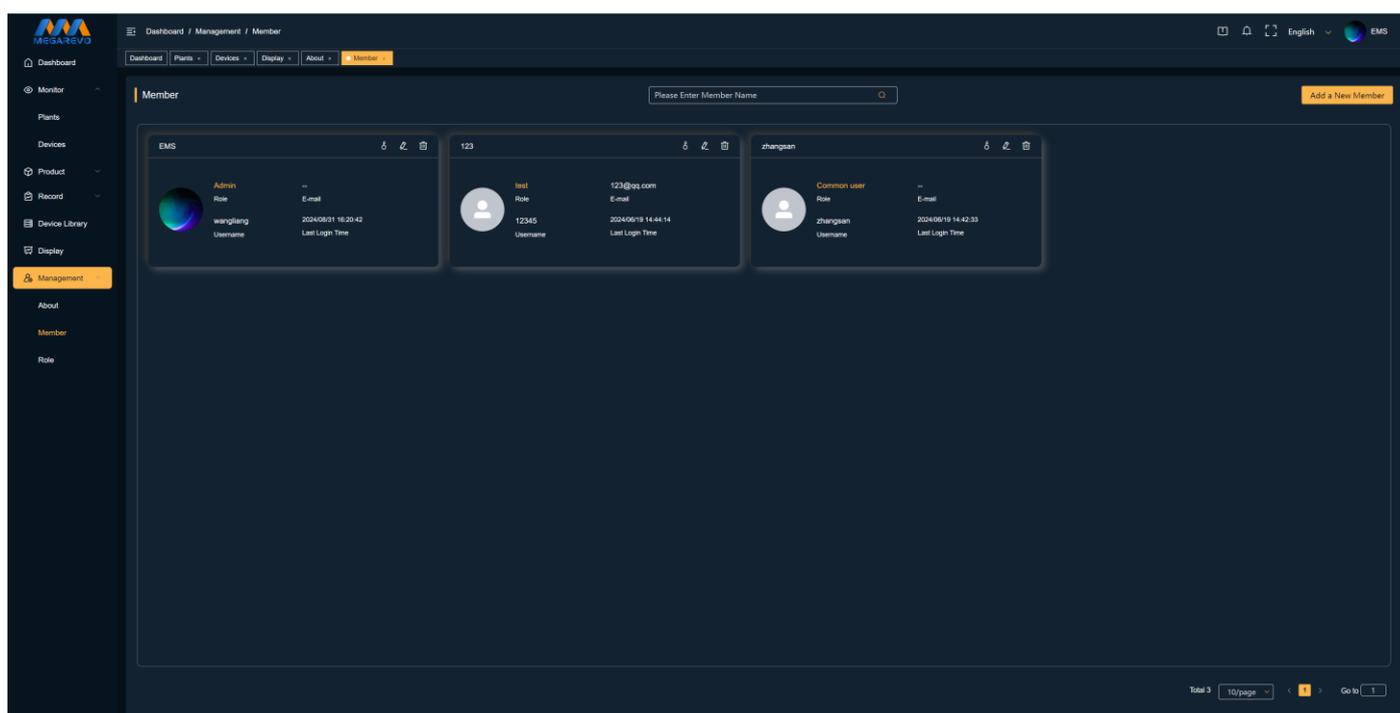


## 4.4.16 Members

The member section displays information of sub-accounts of members. By adding new members and assigning roles to relevant members, they can work together to manage the account. The member list displays the following information: member name, role, phone number, email, username, and last login time.

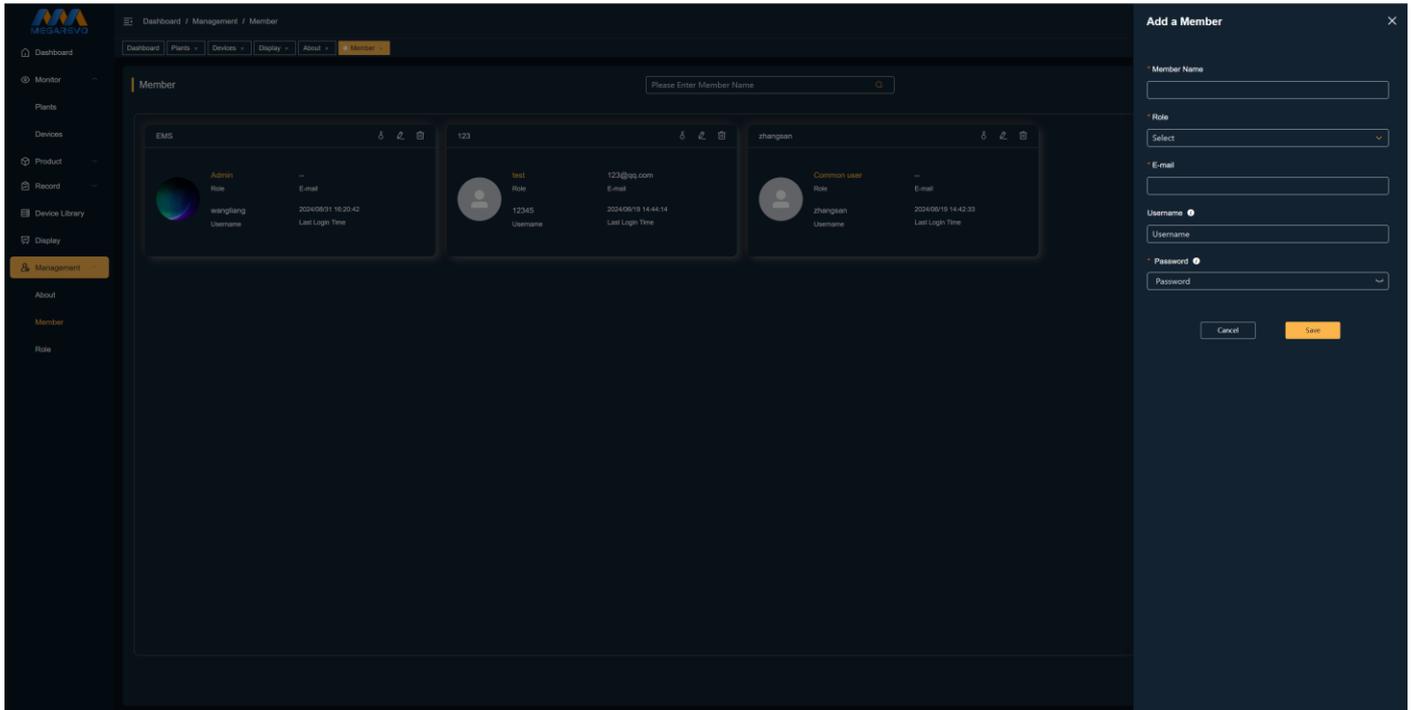
### 1) Member search function

When you need to quickly find the required sub-account of a member, enter the member's name, and the page will provide the most relevant results for your search.



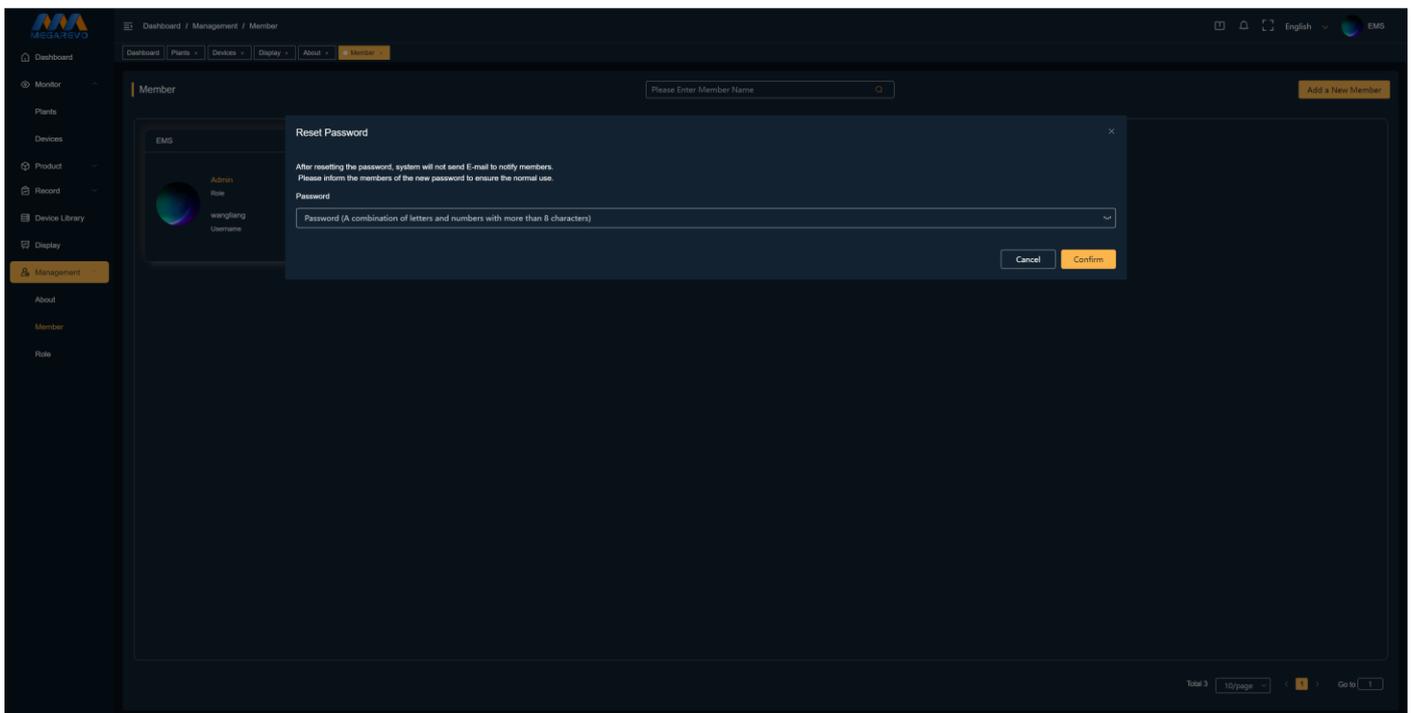
## 2) Add Member Function

Click on "Add New Member" to enter the page for adding a new member. Fill in the login email, member name, login username, login password, select a role, and after saving, the member can log in to the company account using their email or username.



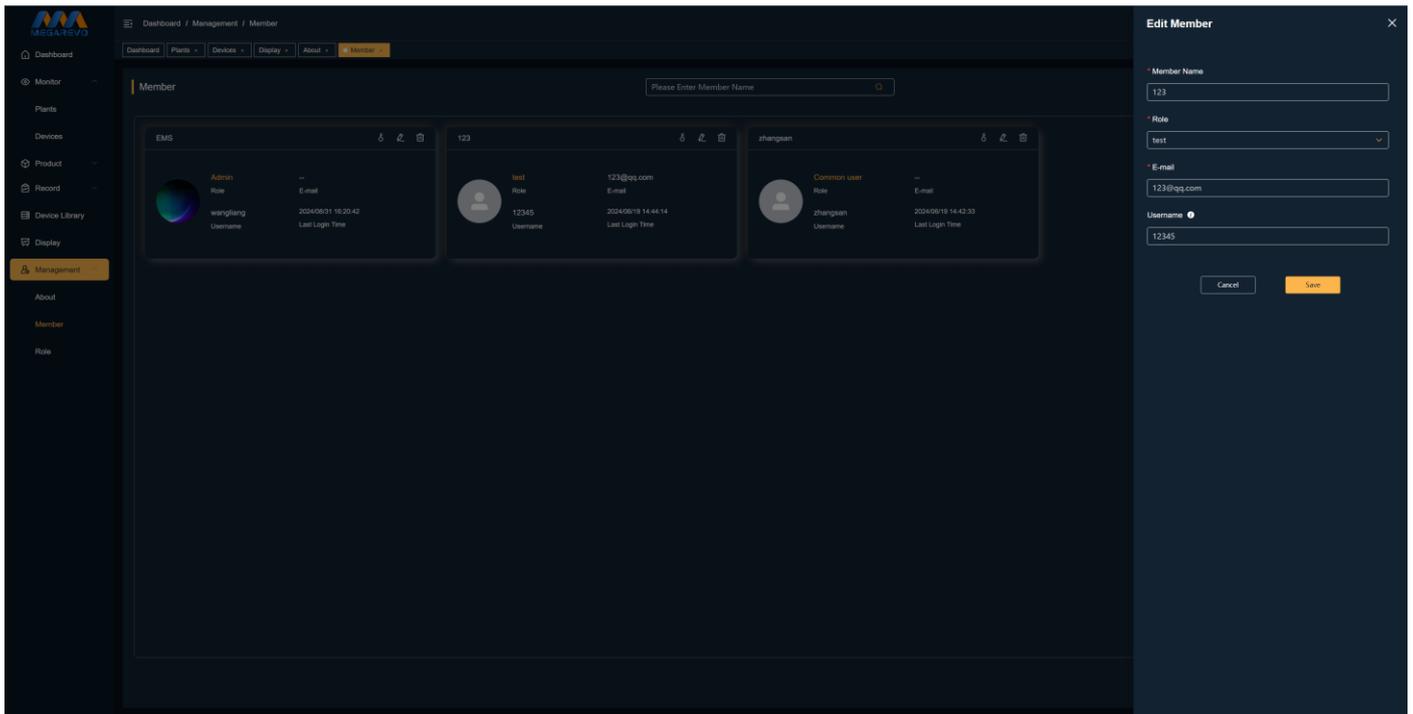
## 3) Reset Password Function

Reset the password for a member's sub-account.



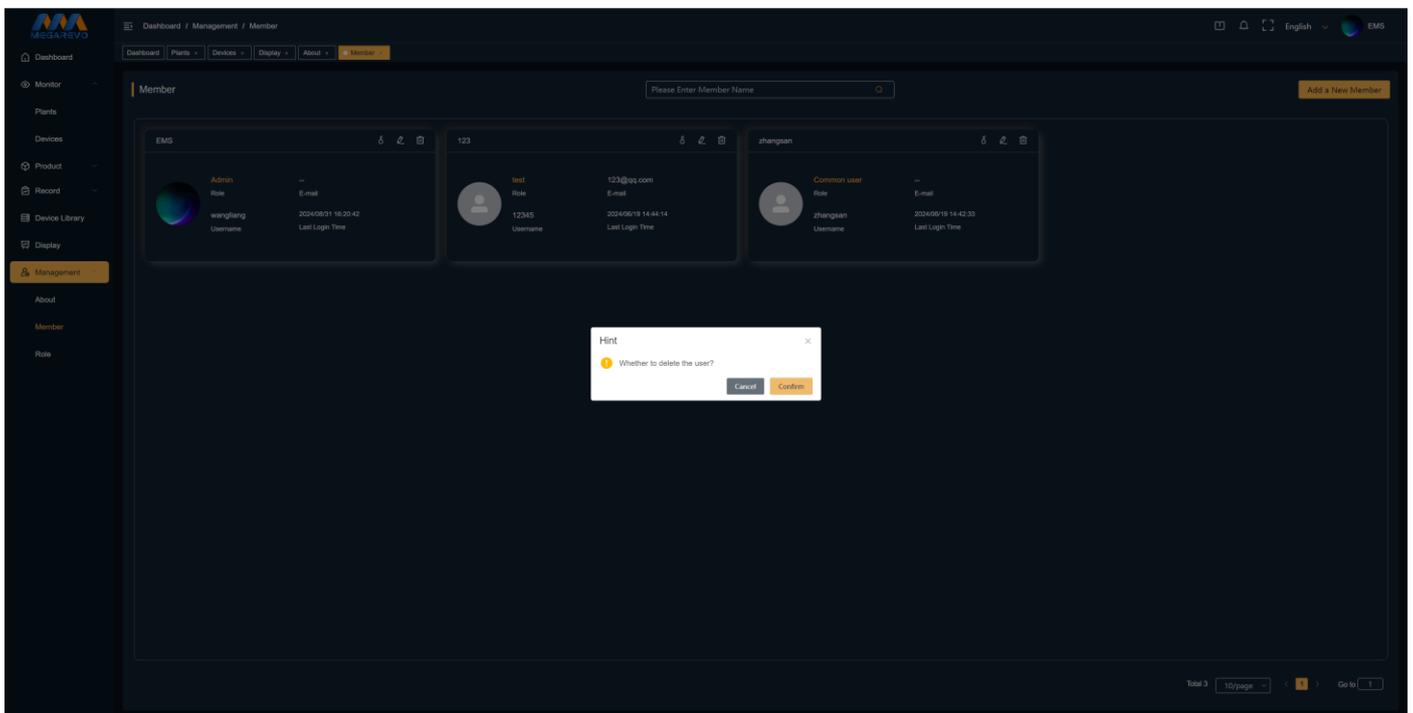
#### 4) Edit Member Function

Edit the information of a successfully added member. Editable content includes: login email, member name, login username, and role.



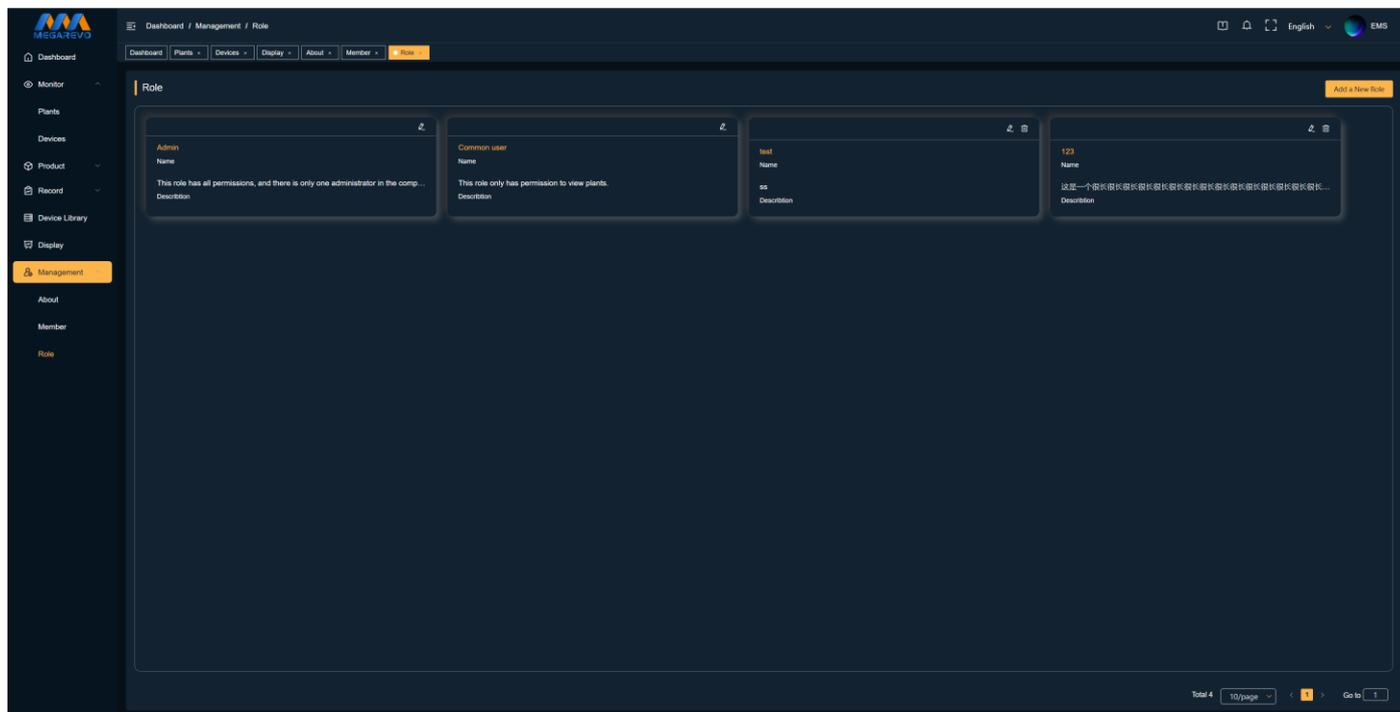
#### 5) Delete Member Function

Delete the information of a successfully added member. Once the deletion action is performed, it cannot be undone.



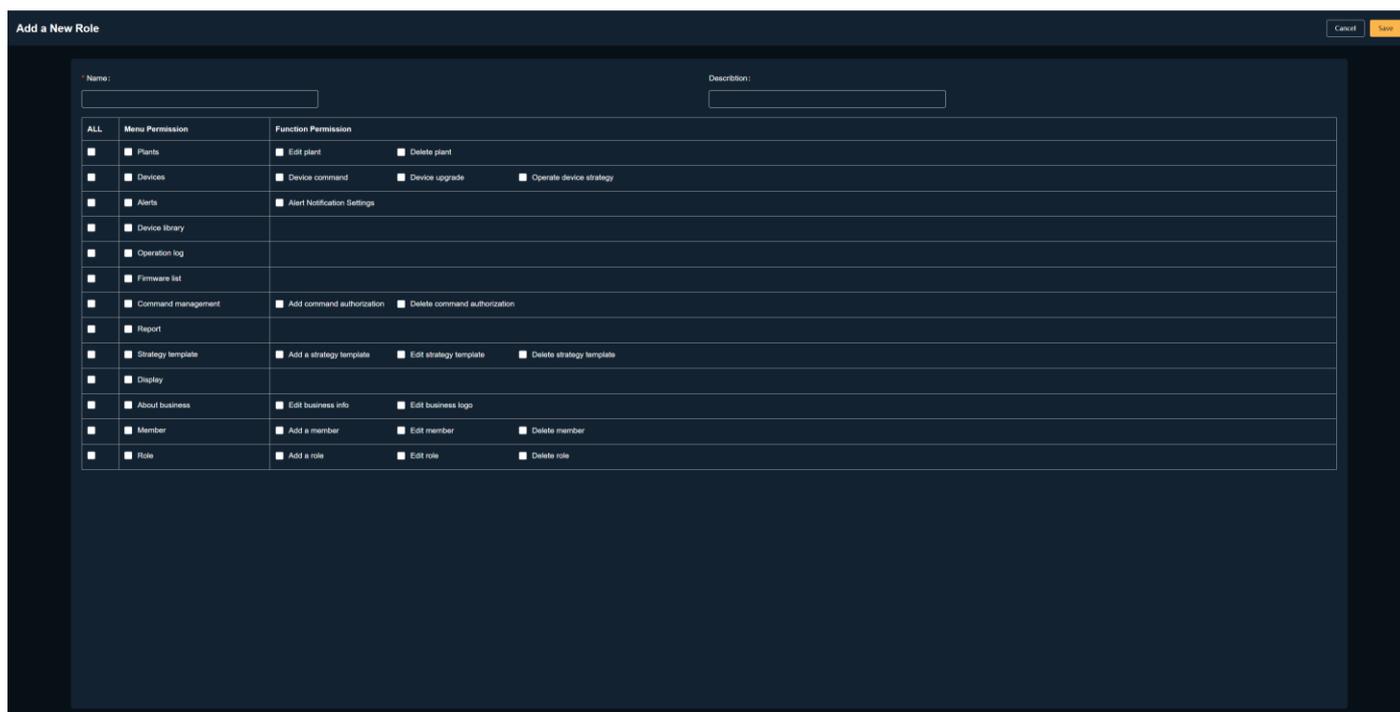
## 4.4.17 Roles

The Roles section is used to control the scope of data visibility and functions available to members. Account function permissions are based on roles. By dividing different roles and assigning different function permissions, the distinction of functional permissions among members can be achieved by assigning roles in the Member section when adding new members and editing members. The role list displays the following information: role name and role description.



### 1) Add Role Function

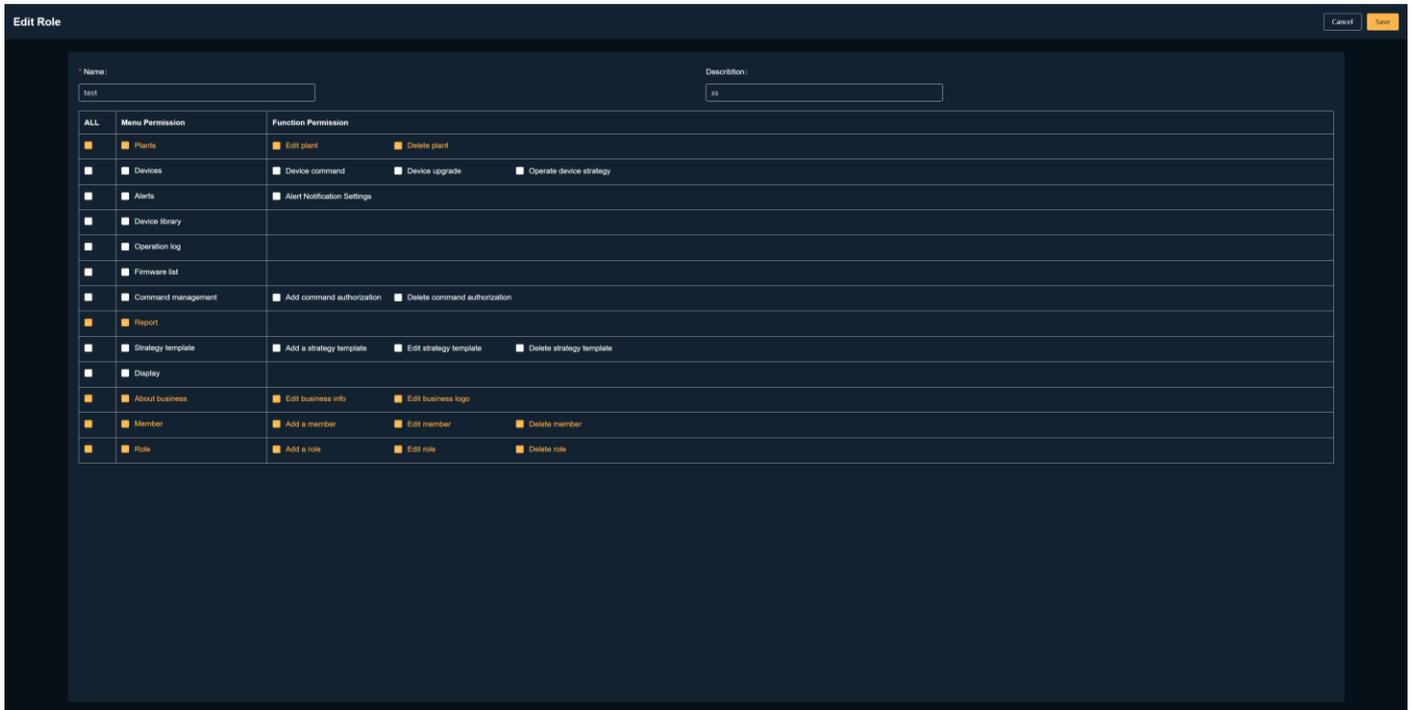
Click on "Add New Role" to enter the page for adding a new role. Fill in the role name, role description (optional), select the role permissions, and after saving, you can assign roles to members in the Member section.



## 2) Edit Role Function

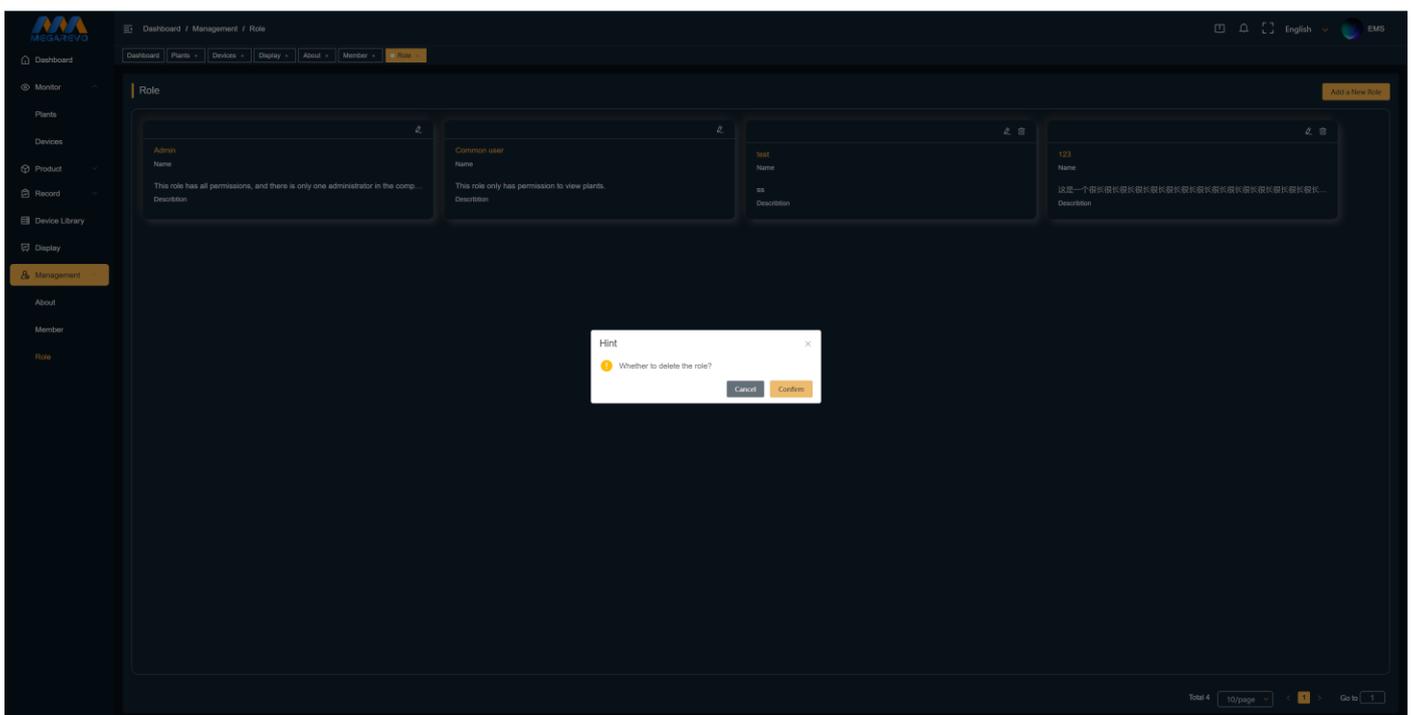
Edit the information of a successfully added role. Editable content includes: role name, role description, and role permissions.

The administrator role and regular user role cannot be edited. The administrator role has all permissions, and there can only be one administrator per company. The regular user role only has permissions to view power stations.



## 3) Role Deletion Function

Delete successfully added role information. The deletion action cannot be undone once it occurs.



## Attachments

Cloud Platform Web Terminal User Manual

<https://help-user.emsplatform.cloud/>

Cloud Platform Web Merchant End User Manual

<https://help-business.emsplatform.cloud/>