PANGU OS User Manual

WHES-PANGU EMS V1.4.4

Jiangsu Weiheng Intelligent Technology Co., Ltd

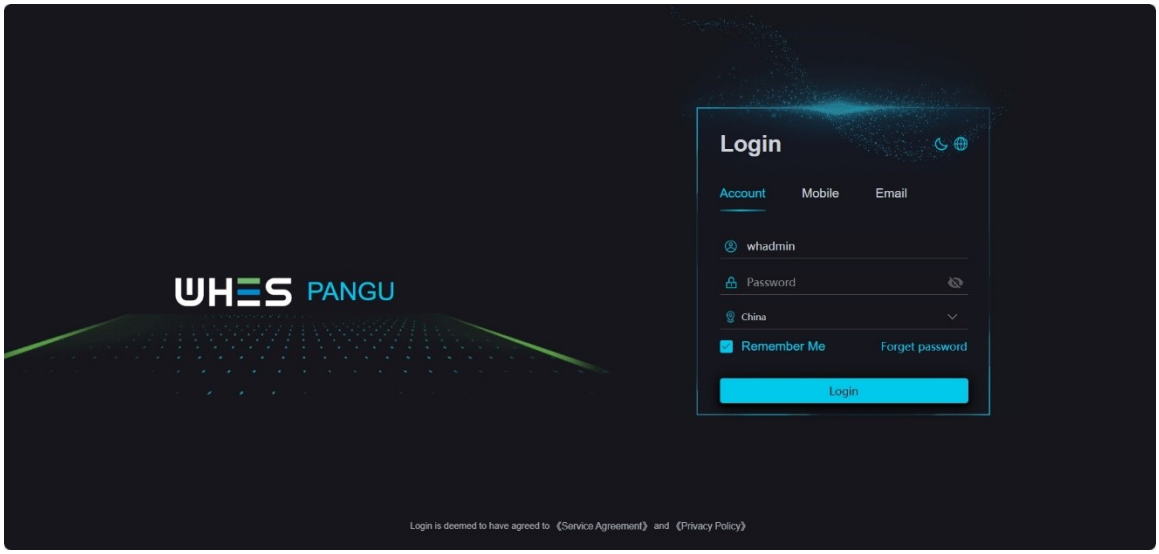
Introduction

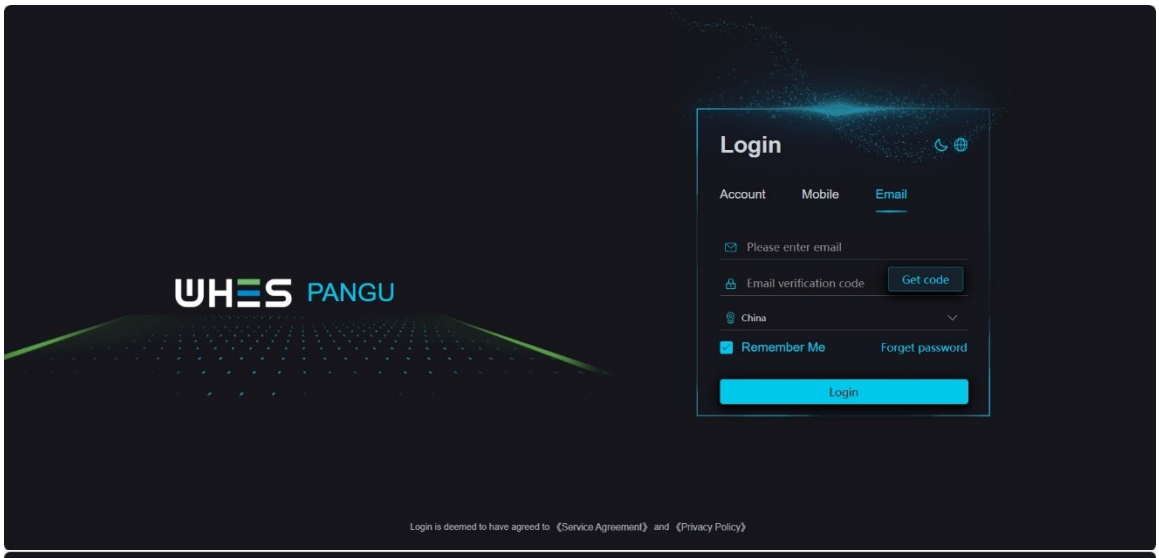
This document is the operating instructions of the PANGU OS, a product of Jiangsu Weiheng Intelligent Technology Co., Ltd. This document explains in detail the functions and the correct operation of the system, as well as how to use the energy storage energy management system correctly and effectively.

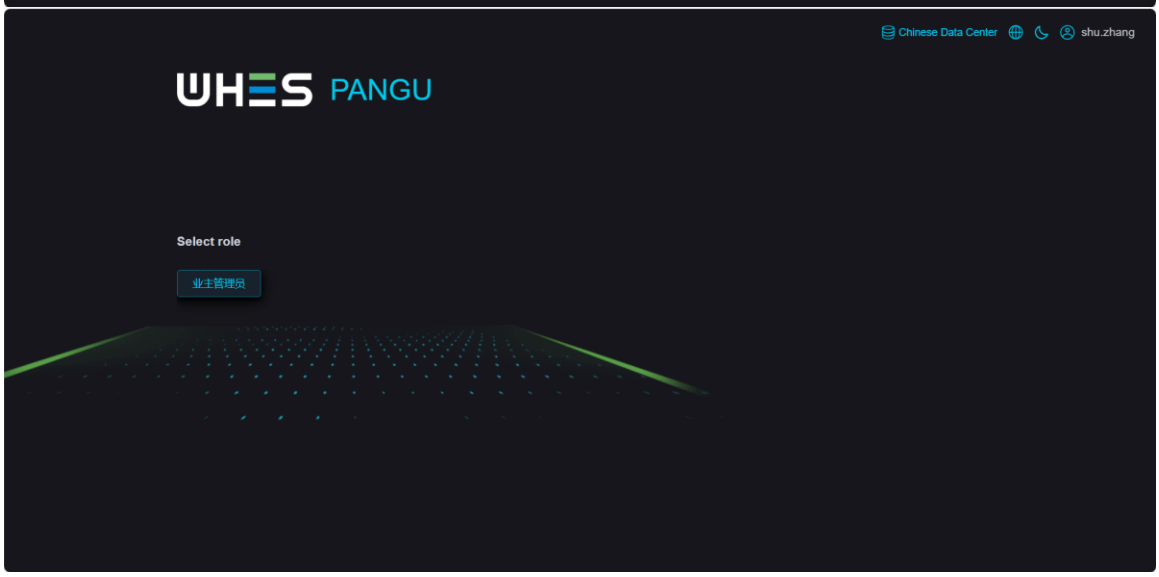
Main Functionality

Login System

Feature Screen:







Functions

Requirements:

1. Already have an account and password.
2. The PANGU energy management system is working properly and the network between the device and the server is working properly.

Procedures:

1. Access to the PANGU Energy Management System login page.
2. Enter your user account and password and click on "Login", you can select "Remember" if needed.
3. After binding the email, you can log in using the email and verification code

4. After successfully logging in, you will enter the role selection page. Click on your user role to access the main page.

Logout System

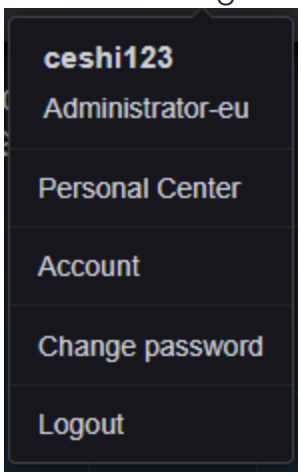
Functions:

Requirements:

1. Logged into The PANGU Energy Management System.

Procedures:

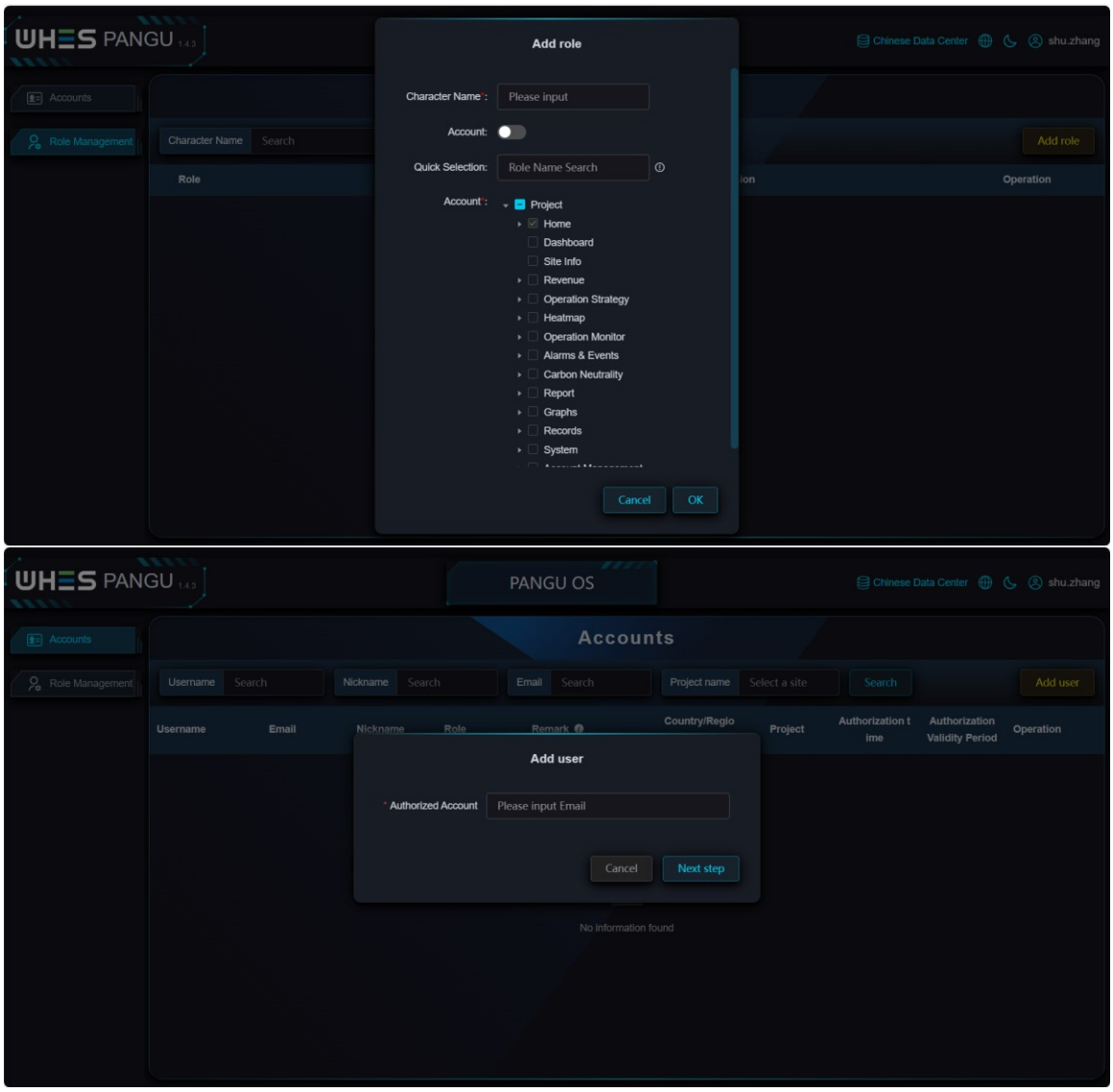
1. Hover over your account icon in the top right corner of the system to see the logout button.

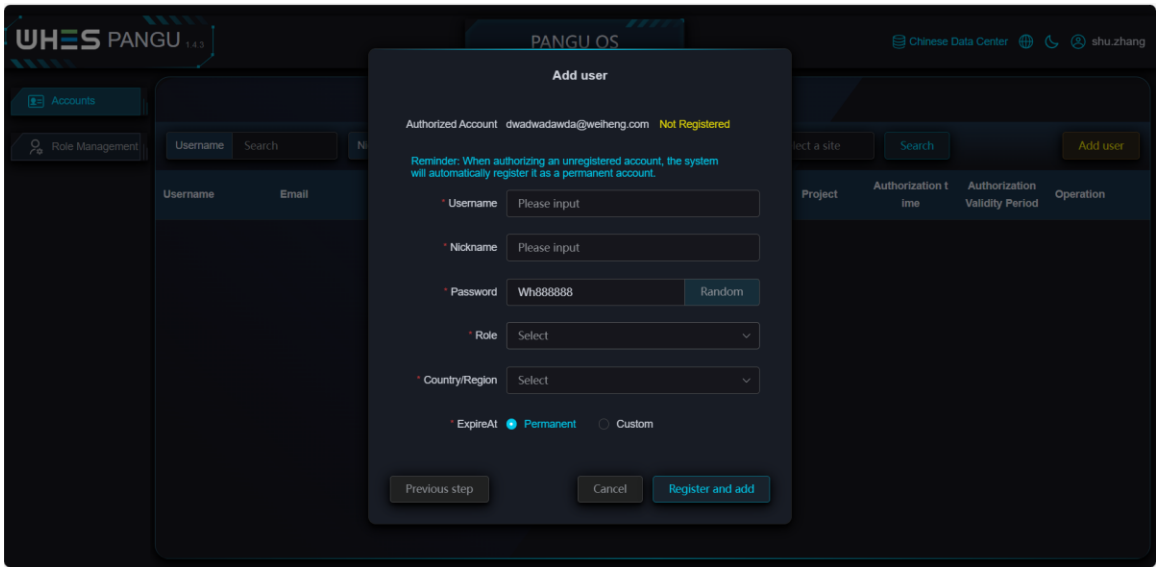


2. Click on "Log out" and click on the "Log out" button in the pop-up window again to log out of the PANGU Energy Management System.

Acount

Feature Screen:





Functions:

1. First, enter the "Role Management" page, select the permissions, and add a subordinate user role.
2. Then, proceed to the "Account Management" page, enter the email address, add a user. Upon successful registration and addition, the user's email will receive a message containing the initial password, which the user can subsequently change.

Change Password

Feature Screen:

Functions:

1. Login system and hover over your account icon in the top right corner of the system and click on "Change password".
2. Enter the right original password.
3. Enter the new password and confirm.

Home

Feature screen:

Plant view

Functions:

1. This page shows the energy flow trends in the power station and the real-time operational state of the PV system, the load, the energy storage system and the grid.
2. The plant view shows the energy flow trend of the energy storage system and the real-time operating status and data of the system.
3. Single view mode shows energy flow trends and real-time operational status and data of the individual energy storage units.
4. Energy storage system operating state.
   Charging: Indicates that the energy storage system is being charged.
   Discharging: Indicates that the energy storage system is being discharged.
   Offline: Indicates that the energy storage system is offline.

Standby: Indicates that the equipment is operating normally, no fault, no charging and discharging is taking place.
Stop: Indicates that the equipment has stopped operating.

5. System operation state and data is refreshed every 5 seconds.

Single view:

Feature screen:

Functions:

If there are multiple sets of ESS, all ESS run states and data are displayed on the standalone mode page.

Dashboard

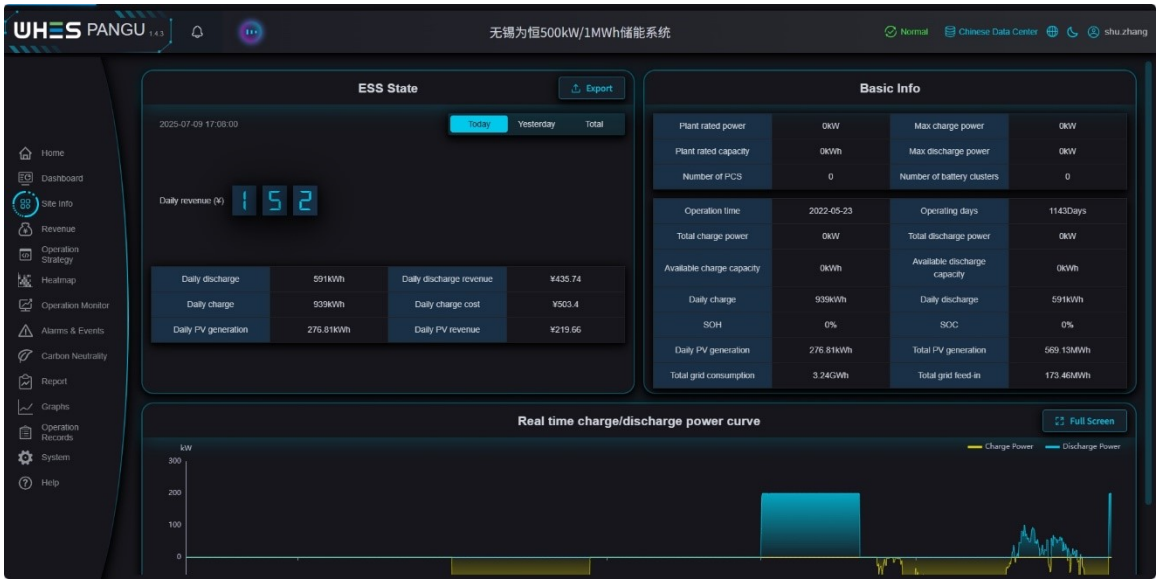
Feature Screen:

Functions:

1. The page shows power station configuration, container inspection, control strategy, power curve, PCS operation monitoring, energy storage thermal map, safe operation days, revenue, electricity consumption, 3D real-time energy flow, date, weather, and so on
2. Click on the top right corner  or click on the top title  to exit the project screen

Site Info

Feature Screen:



Functions:

1. The page shows the operation status of the ESS and the basic information of the station, including the operating revenue, the power and energy of each energy source, and the real-time total charge and discharge power curve.

2. Basic conditions include: plant rated power, rated capacity, maximum chargeable power, battery clusters, number of PCS, battery health SOH, remaining battery capacity SOC, total grid power consumption, etc.
3. Energy storage station operation state including: charging and discharging capacity and revenue of energy storage system, demand power reduction and demand control revenue, PV generation energy and revenue.
4. Excel export function for energy storage station operation data.
5. Real-time charge and discharge power curves support full screen display, support middle mouse button scrolling to zoom the horizontal coordinate time span, support charging power/discharging power curve partial display or all display.

Revenue

System Revenue

Functions

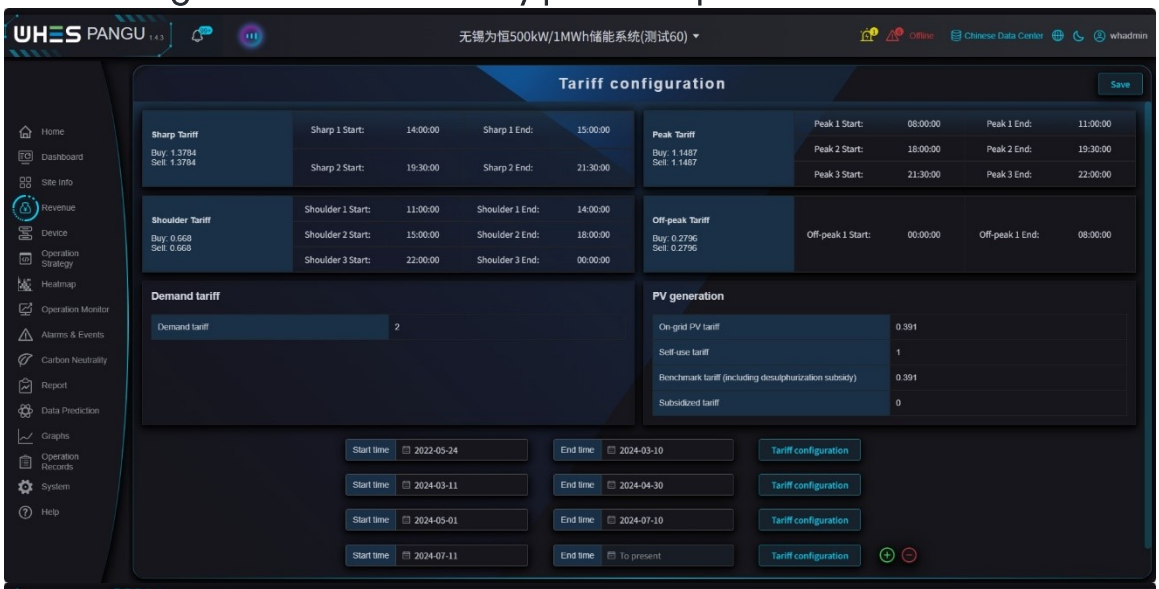
1. This page includes: total revenue of the energy storage system, charge and discharge revenue, demand control revenue and PV generation revenue and export button.
2. Firstly, as electricity prices and periods vary from time to time, to ensure the accuracy of the revenue data, please click on the 'Power tariff configuration' button and configure the exact tariff and period according to your local conditions before viewing the data.
3. Click on the Demand Control Revenue module, the lower part of the module will show reduced demand power and demand control revenue.
4. Click on the PV generation revenue module, the following shows the amount of carbon emission reduction, Self use quantity, Self use revenue, Feed grid quantity, Feed grid revenue.

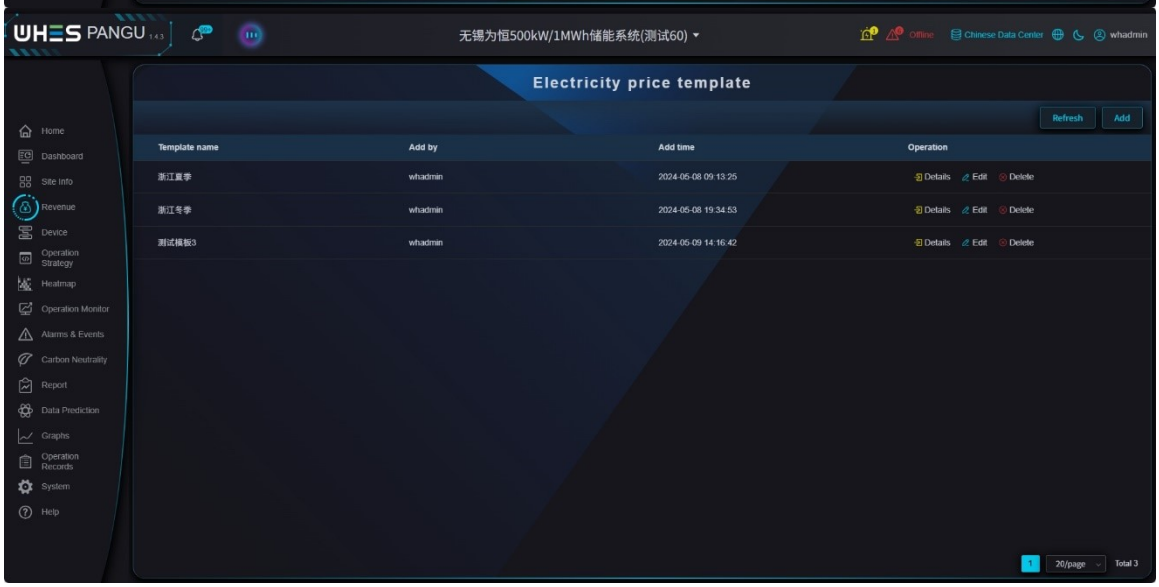
ESS Revenue

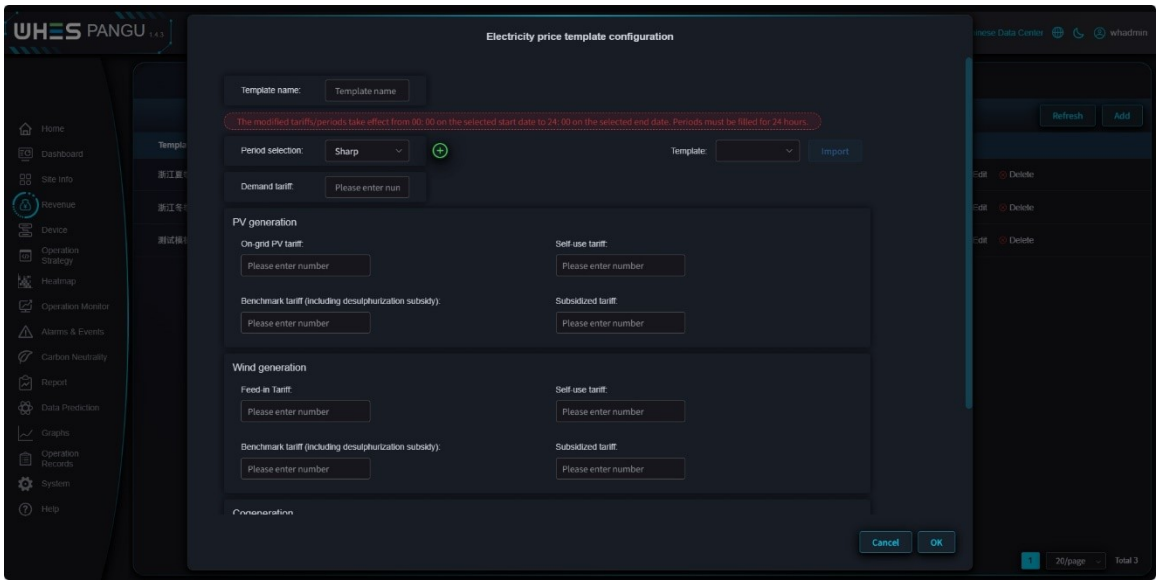
Functions:

This page shows the cost of charging, the benefit of discharging, and the percentage of charging/discharging for each time period for valley, flat, peak and peak, as well as a histogram of the benefit of charging/discharging for each time period for valley, flat, peak, top and total.

Tariff configuration and Electricity price template





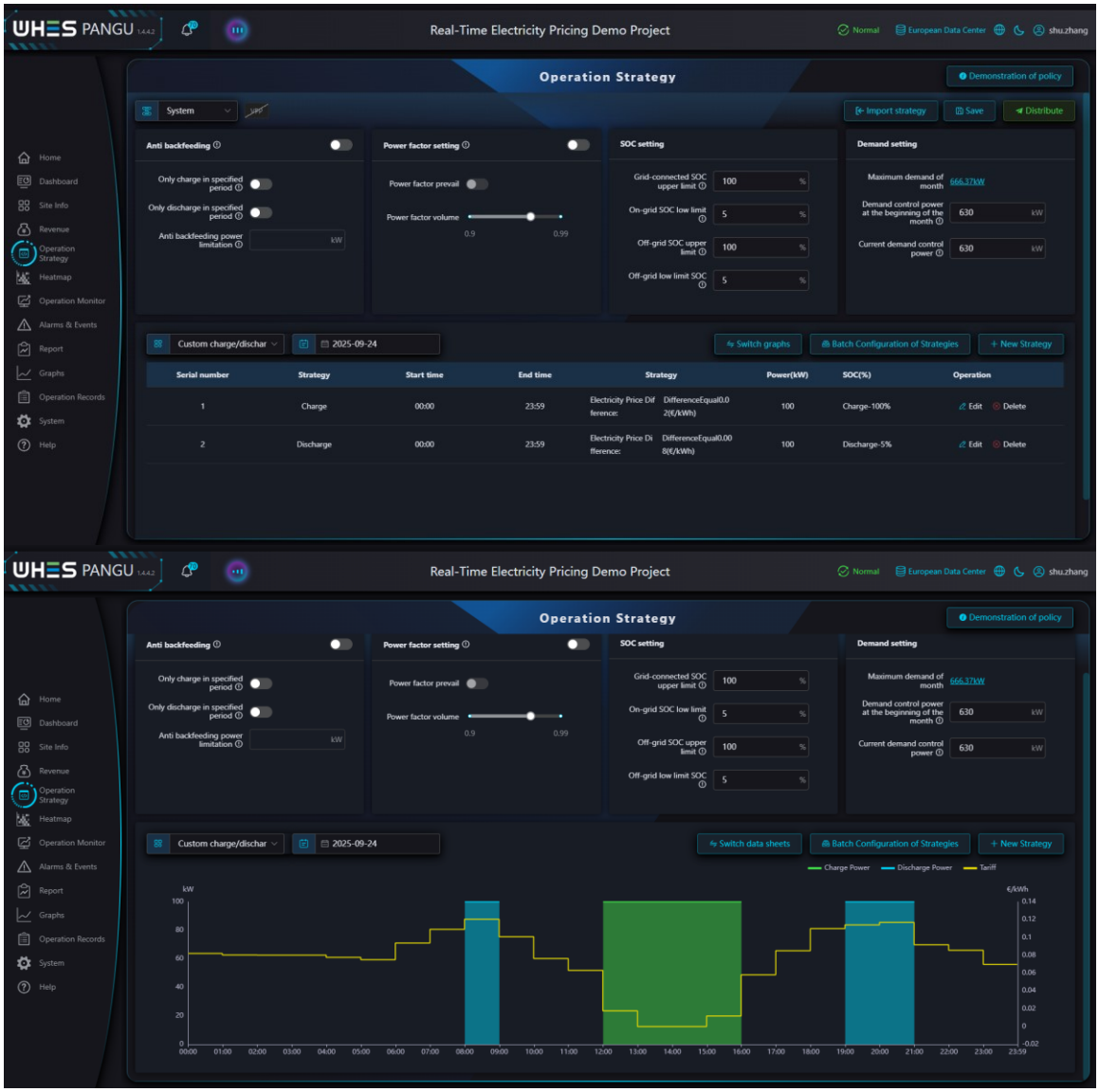


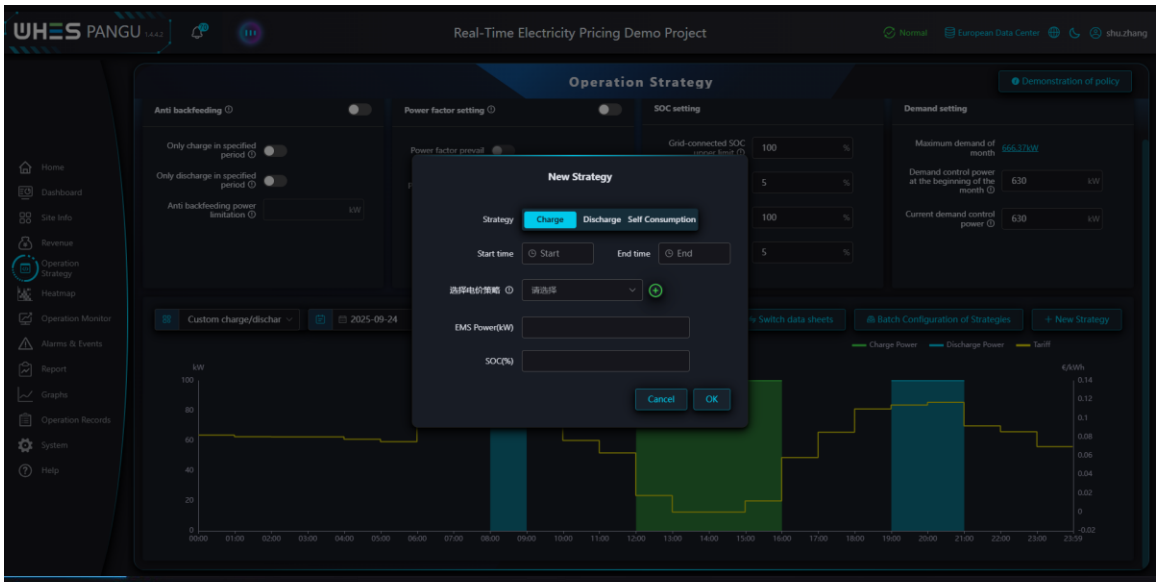
Functions:

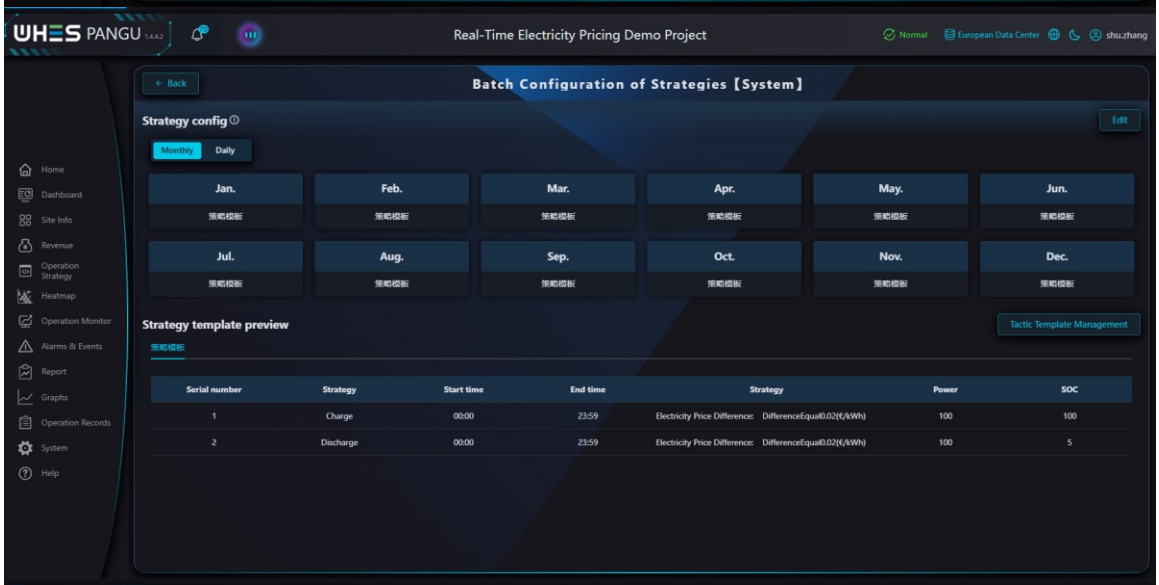
1. The first tariff period by default is from the first activation of the system to the present, if there is a tariff change in the meantime, you can click on "+" to add tariff period, click "-" delete tariff period. The tariff does not need to be updated in real time, as long as the date of change is correct, the corresponding revenue data will be automatically adjusted after the tariff period is updated at a later date.
2. Tariff configuration steps
   a) Click on Tariff/Session Configuration
   b) Select the start and end dates
   c) Configure peak, peak, valley and flat tariff periods and tariffs for different time periods, enter the tariff and select the time period (the time period is 24 hours, starting at 0:00 and ending at 0:00, no overlap of time)
   d) Click on Confirm, the pop-up window will close and click on Save to complete the tariff period configuration.
3. Click on 'Electricity price template' and click 'Add' to add electricity price templates.

Operation Strategy

Feature screen:




WHES PANGU 1.4.4.2
Real-Time Electricity Pricing Demo Project
Normal
European Data Center
shu.zhang
Operation Strategy
Demonstration of policy
Anti backfeeding
Power factor setting
SOC setting
Demand setting
Only charge in specified period
Only discharge in specified period
Anti backfeeding power limitation
Maximum demand of month
Demand control power at the beginning of the month
Current demand control power
New Strategy
Strategy
Charge
Discharge
Self Consumption
Start time
End time
选择电价策略
EMS Power(kW)
SOC(%)
Cancel
OK
Custom charge/dischar
2025-09-24
Switch data sheets
Batch Configuration of Strategies
New Strategy
Charge Power
Discharge Power
Tariff
Home
Dashboard
Site Info
Revenue
Operation Strategy
Heatmap
Operation Monitor
Alarms & Events
Report
Graphs
Operation Records
System
Help


WHES PANGU 1.4.4.2
Real-Time Electricity Pricing Demo Project
Normal
European Data Center
shu.zhang
Back
Batch Configuration of Strategies【System】
Strategy config
Edit
Monthly
Daily
Jan.
Feb.
Mar.
Apr.
May.
Jun.
Jul.
Aug.
Sep.
Oct.
Nov.
Dec.
策略模板
Strategy template preview
Tactic Template Management
Serial number
Strategy
Start time
End time
Strategy
Power
SOC
1
Charge
00:00
23:59
Electricity Price Difference: DifferenceEqual0.02(€/kWh)
100
100
2
Discharge
00:00
23:59
Electricity Price Difference: DifferenceEqual0.02(€/kWh)
100
5
Home
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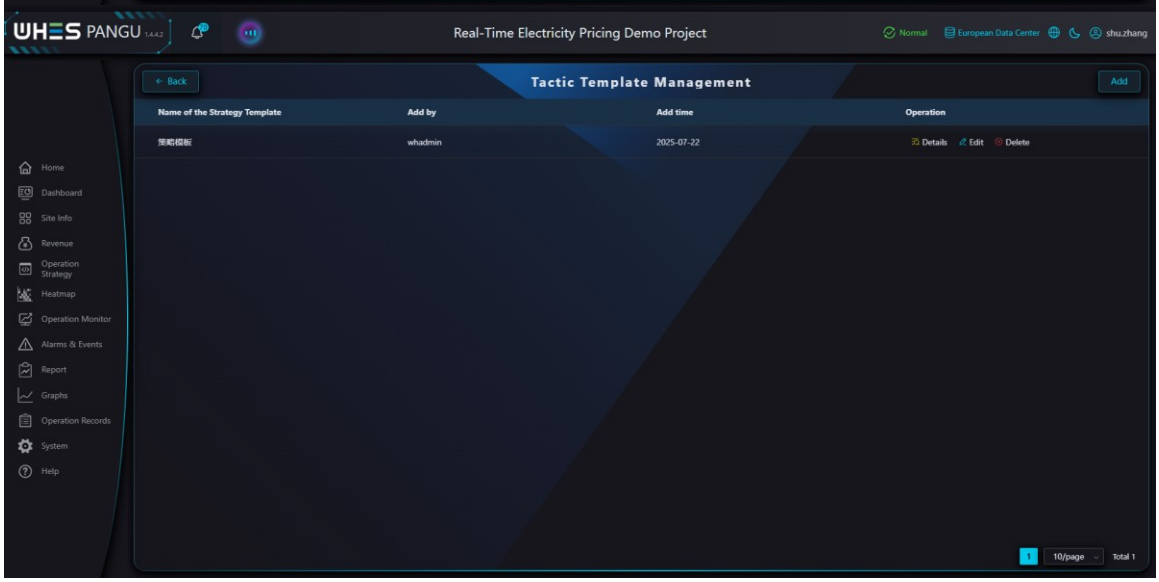
WHES PANGU 1.4.4.2
Real-Time Electricity Pricing Demo Project
Normal
European Data Center
shu.zhang
Back
Tactic Template Management
Add
Name of the Strategy Template
Add by
Add time
Operation
策略模板
whadmin
2025-07-22
Details
Edit
Delete
1
10/page
Total 1
Home
Dashboard
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Operation Monitor
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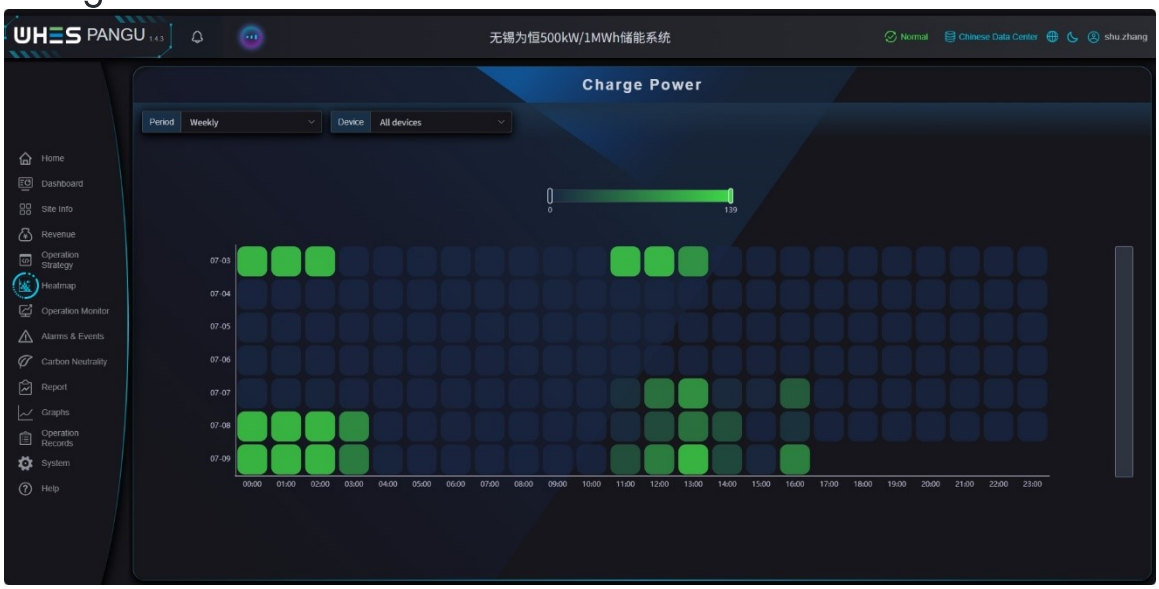
Functions:

1. Configure system group strategy: System grouping strategy are control strategies for the entire power plant, including: anti-backfeeding, declared demand power, demand control power, min discharge SOC, only charge in set time, only discharge in set time, power factor setting, power factor prevail, charging and discharging strategies, etc.
2. The strategies include: anti-reverse flow, demand control, capacity control, power factor locking, and timed charging and discharging.
3. Click on "Batch Configuration of Strategies" to set up strategies in batches. You can create and manage strategy templates and support the annual distribution of strategies..

4. Support batch import of system/non-system strategies.

Heatmap

Charge Power:



Functions:

This page shows the charge power heat map for the last 7 days, 30 days and 1 year for all devices. When viewing the heat map for the last 1 year, you can check it by week or by a specific date.

Discharge Power:

Functions:

This page shows the discharge power heat map for the last 7 days, 30 days and 1 year for all devices. When viewing the heat map for the last 1 year, you can check it by week or by a specific date.

Charge/Discharge Power:

Functions:

This page shows the charge and discharge power heat map for the last 7 days, 30 days and 1 year for all devices. When viewing the heat map for the last 1 year, you can check it by week or by a specific date.

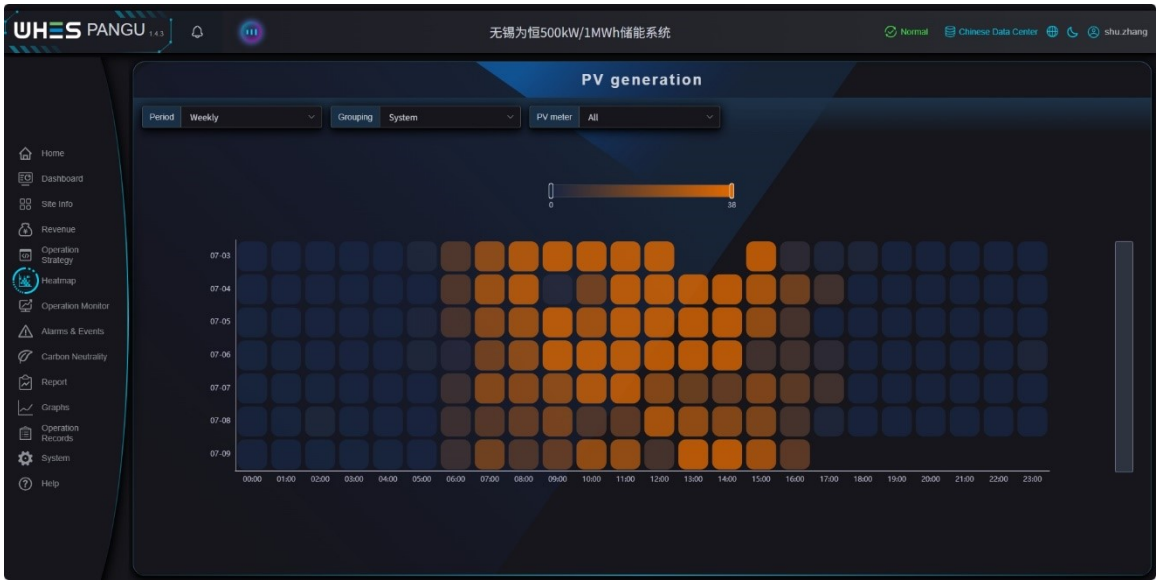
Load Power:

Functions:

This page shows the load power heat map for the last 7 days, 30 days

and 1 year for all devices. When viewing the heat map for the last 1 year, you can check it by week or by a specific date.

PV Generation:



Functions:

This page shows the PV power heat map for the last 7 days, 30 days and 1 year for all devices. When viewing the heat map for the last 1 year, you can check it by week or by a specific date.

Thermal Field:

Functions:

1. Visualisation of the temperature data of all the battery cells in the energy storage system in the form of a temperature field.

2. Support for querying the battery cells temperature data at a specific moment in time.

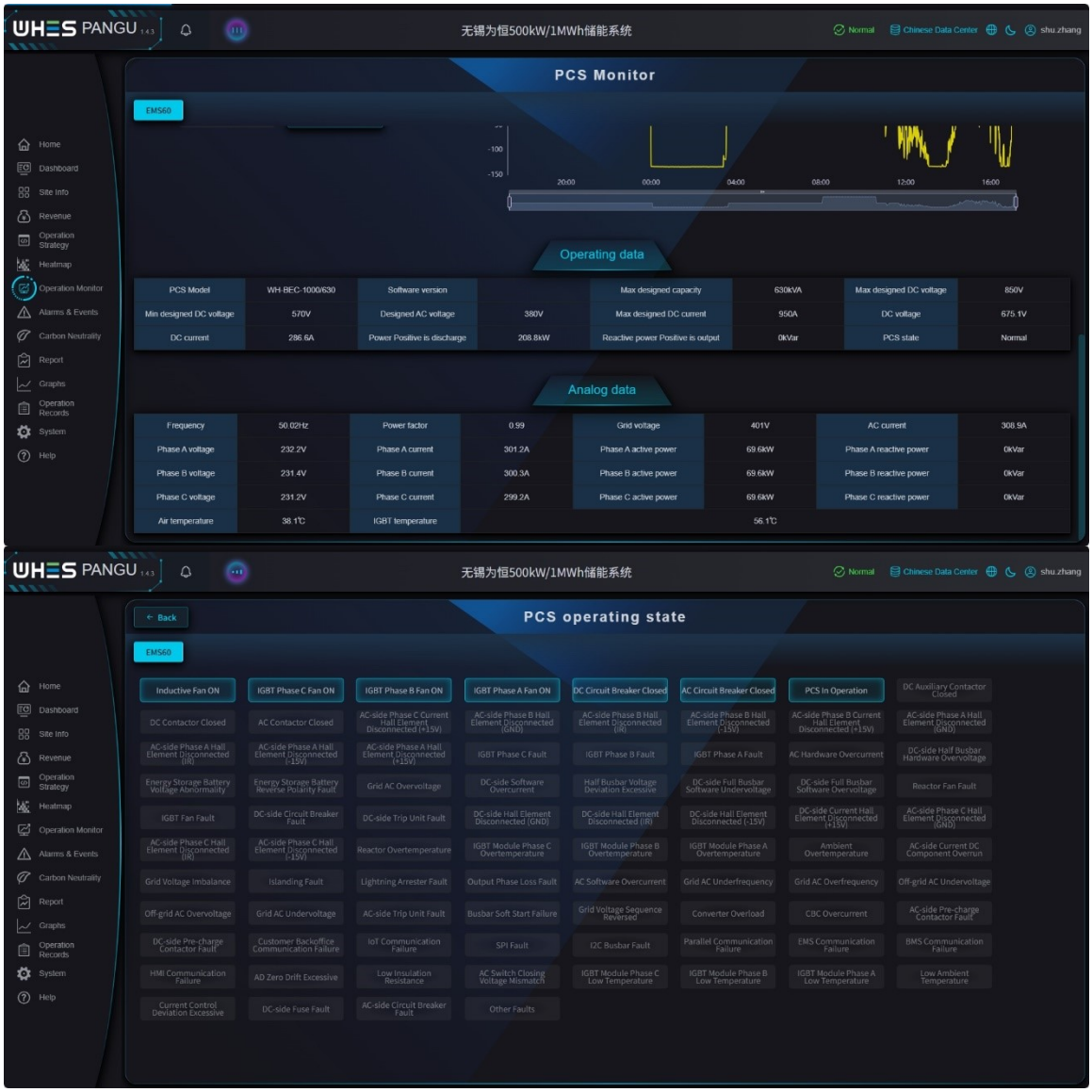
Voltage Field:

Functions:

1. Visualisation of the voltage data of all the cells in the energy storage system in the form of a voltage field.
2. Support for querying the voltage data of the cells at a specific moment in time.

Operation monitor

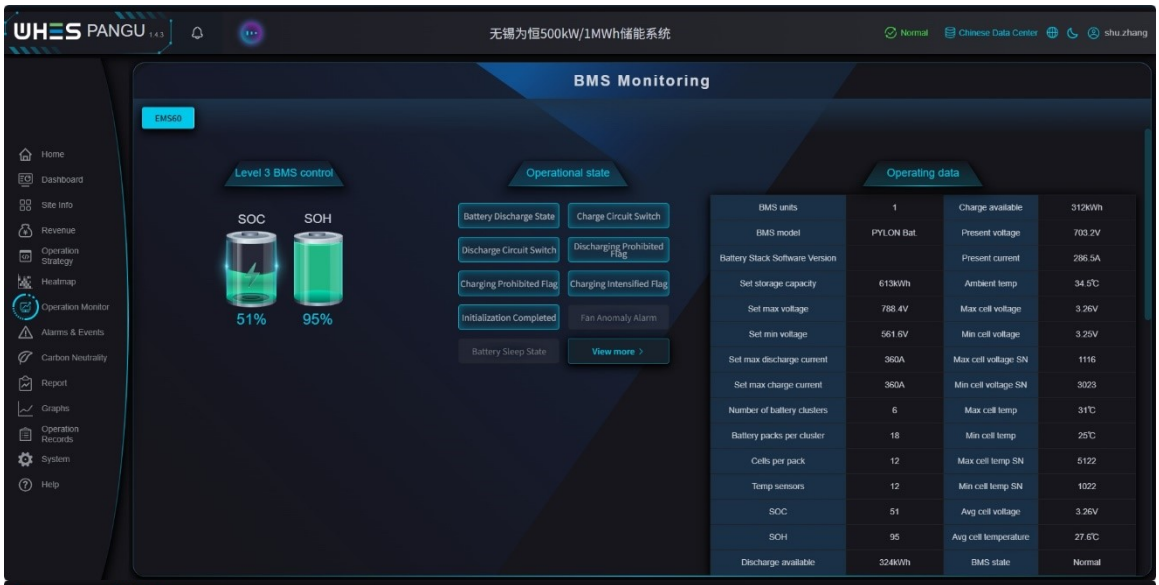
PCS Monitor



Functions:

1. Monitor PCS all operating state.
2. Real-time monitoring of DC current, DC voltage and three-phase voltage data.
3. Real-time monitoring of active and reactive power curves.
4. Display PCS operating data and analog data, including design capacity, design maximum and minimum voltage, frequency, power factor, active power and reactive power, etc.

BMS Monitor


UHES PANGU
无锡为恒500kW/1MWh储能系统
Normal
Chinese Data Center
shu.zhang
BMS Monitoring
EMS60
Level 3 BMS control
SOC
SOH
51%
95%
Operational state
Battery Discharge State
Charge Circuit Switch
Discharge Circuit Switch
Discharging Prohibited Flag
Charging Prohibited Flag
Charging Intensified Flag
Initialization Completed
Fan Anomaly Alarm
Battery Sleep State
View more
Operating data
BMS units 1
Charge available 312kWh
BMS model PYLON Bat
Present voltage 703.2V
Battery Stack Software Version
Present current 286.5A
Set storage capacity 613kWh
Ambient temp 34.5℃
Set max voltage 788.4V
Max cell voltage 3.26V
Set min voltage 561.6V
Min cell voltage 3.25V
Set max discharge current 360A
Max cell voltage SN 1116
Set max charge current 360A
Min cell voltage SN 3023
Number of battery clusters 6
Max cell temp 31℃
Battery packs per cluster 18
Min cell temp 25℃
Cells per pack 12
Max cell temp SN 5122
Temp sensors 12
Min cell temp SN 1022
SOC 51
Avg cell voltage 3.26V
SOH 95
Avg cell temperature 27.6℃
Discharge available 324kWh
BMS state Normal
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UHES PANGU
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Normal
Chinese Data Center
shu.zhang
BMS Monitoring
EMS60
Battery cluster#1 50%
Battery cluster#2 52%
Battery cluster#3 50%
Battery cluster#4 51%
Battery cluster#5 52%
Battery cluster#6 51%
Battery Cluster Soft ware Version
State Normal Normal Normal Normal Normal Normal
SOC 50% 52% 50% 51% 52% 51%
SOH 95% 95% 95% 95% 95% 95%
Discharge available 52kWh 53kWh 52kWh 52kWh 54kWh 57kWh
Charge available 52kWh 49kWh 52kWh 50kWh 50kWh 55kWh
Present voltage 703.1V 703.1V 703.1V 703V 703.3V 703.2V
Present current 47.7A 46.7A 47.5A 45.3A 49.8A 48.7A
Ambient temp 35℃ 34℃ 34℃ 34℃ 35℃ 35℃
Max cell voltage 3.26V 3.26V 3.26V 3.26V 3.26V 3.26V
Min cell voltage 3.25V 3.25V 3.25V 3.25V 3.25V 3.25V
Max cell voltage SN 112 51 28 0 75 88
Min cell voltage SN 11 9 23 23 23 59
Max cell temp 29℃ 28℃ 29℃ 28℃ 31℃ 31℃
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Chinese Data Center
shu.zhang
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BMS state overview
EMS60
Battery Discharge State
Charge Circuit Switch
Discharge Circuit Switch
Discharging Prohibited Flag
Charging Prohibited Flag
Charging Intensified Flag
Initialization Completed
Fan Anomaly Alarm
Battery Sleep State
Battery Charge State
Battery Hold State
Temperature Alarm
Current Alarm
Voltage Alarm
Temperature Protection
Voltage Protection
Current Protection
System Fault
Fan Switch
Current Limiting Module Switch
Heating Membrane Switch
Buzzer Switch
Pre-charge Circuit Switch
Insulation Resistance Fault (Level 2)
Insulation Resistance Fault
Charging Balanced Flag
Terminal Temperature Abnormality Alarm
High Module Voltage Alarm
Low Module Voltage Alarm
High Module Temperature Alarm
High Main Control Temperature Alarm
Overcurrent Discharging Alarm
Overcurrent Charging Alarm
High Discharging Temperature Alarm
Low Discharging Temperature Alarm
High Charging Temperature Alarm
Low Charging Temperature Alarm
High Total Voltage Alarm
Low Total Voltage Alarm
High Cell Voltage Alarm
Low Cell Voltage Alarm
Secondary Cell Undervoltage Protection
High Module Voltage Protection
Low Module Voltage Protection
High Module Temperature Protection
Short-circuit Protection
Overcurrent Discharging Protection
Overcurrent Charging Protection
High Discharging Temperature Protection
Low Discharging Temperature Protection
High Charging Temperature Protection
Low Charging Temperature Protection
High Total Voltage Protection
Low Total Voltage Protection
High Cell Voltage Protection
Low Cell Voltage Protection
Emergency Stop Fault
Insulation Fault
Safety Function Abnormality
Power-on Self-test Abnormality
Internal Busbar Fault
BMIC Fault
Shutdown Circuit Fault
Battery Damage Fault
Relay Fault
Input Reverse Connection Fault
Input Overvoltage Fault
Internal Communication Fault
Temperature Sensor Fault
Voltage Sensor Fault
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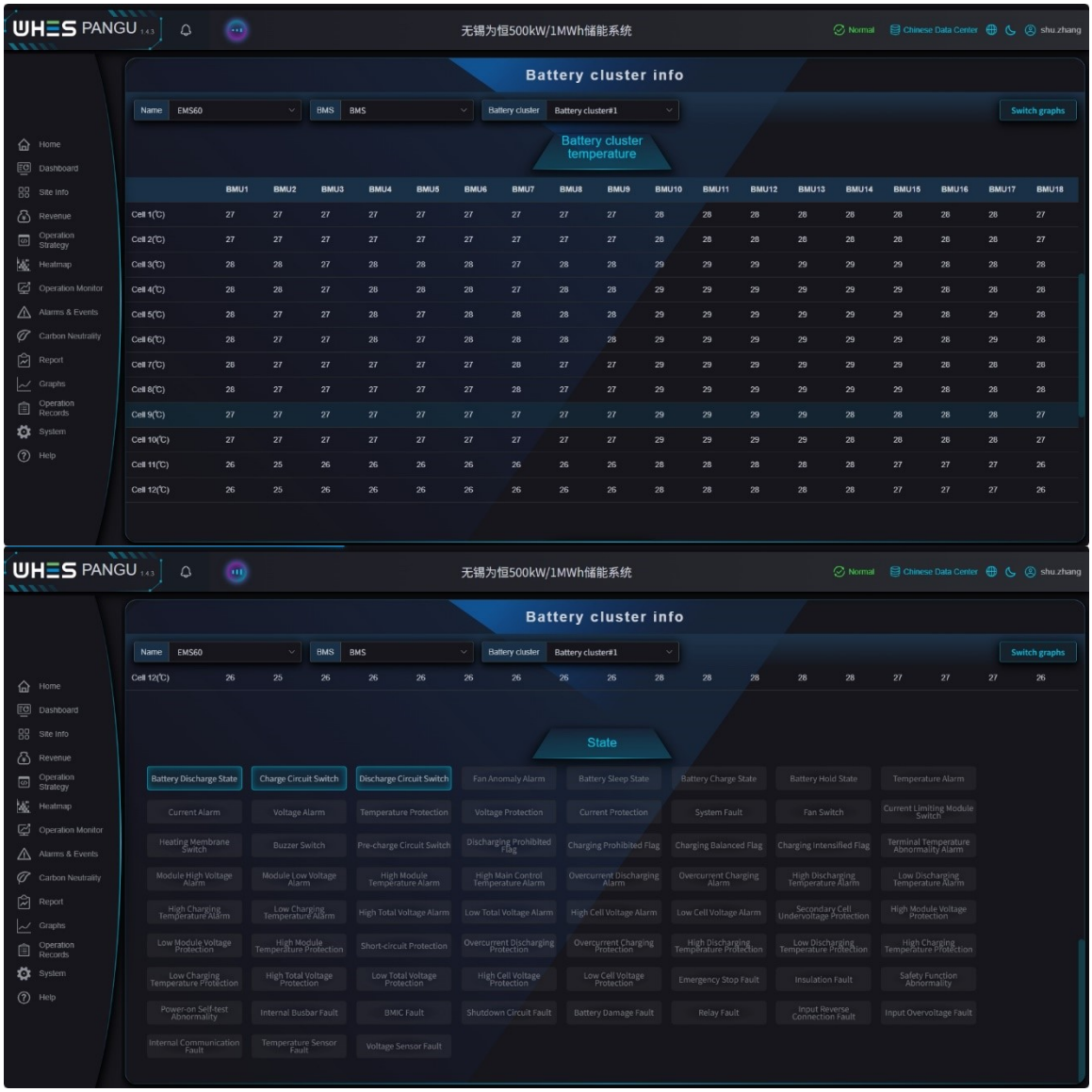
Functions:

1. Monitoring of SOC/SOH, operational state and detailed operational data of the battery BMS.
2. Monitoring of real-time state and data of all battery clusters.

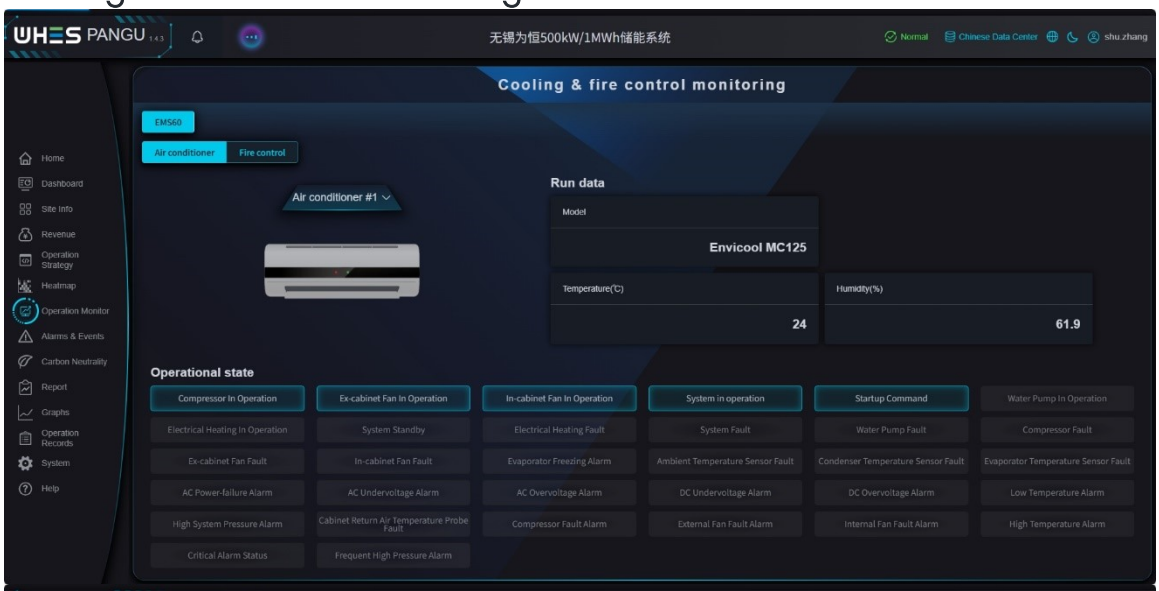
BMS Cluster

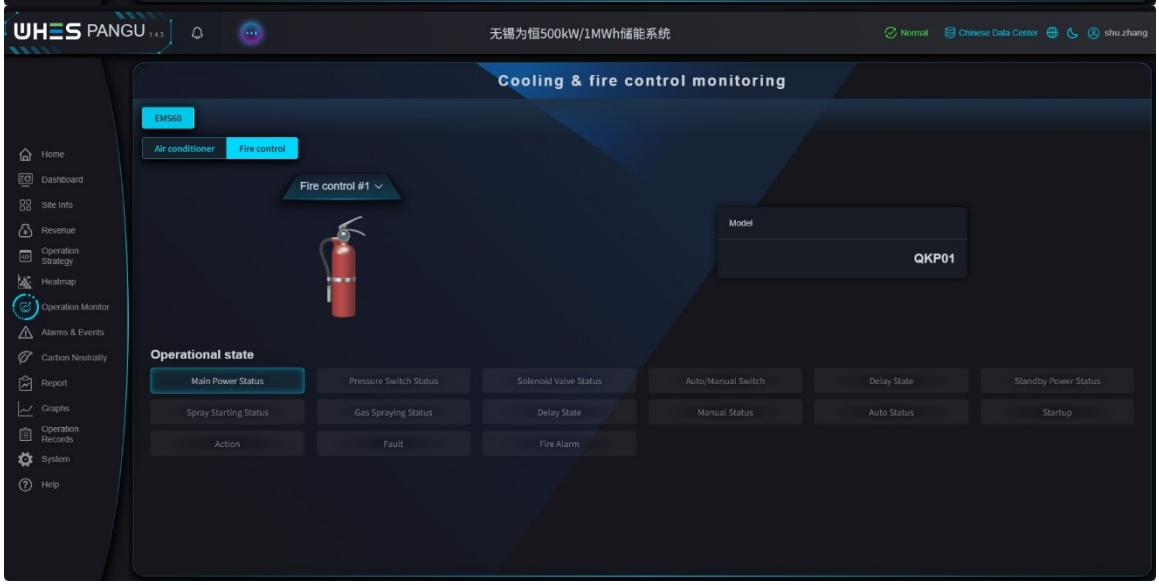


Functions:

1. Monitor the voltage and temperature data for all individual cells in a battery cluster (click on the drop box button to switch between battery clusters or BMUs).
2. The display of cell voltage and temperature data can be switched between graphs and data tables.
3. Monitor the operating states of all battery clusters.

Cooling & Fire control monitoring

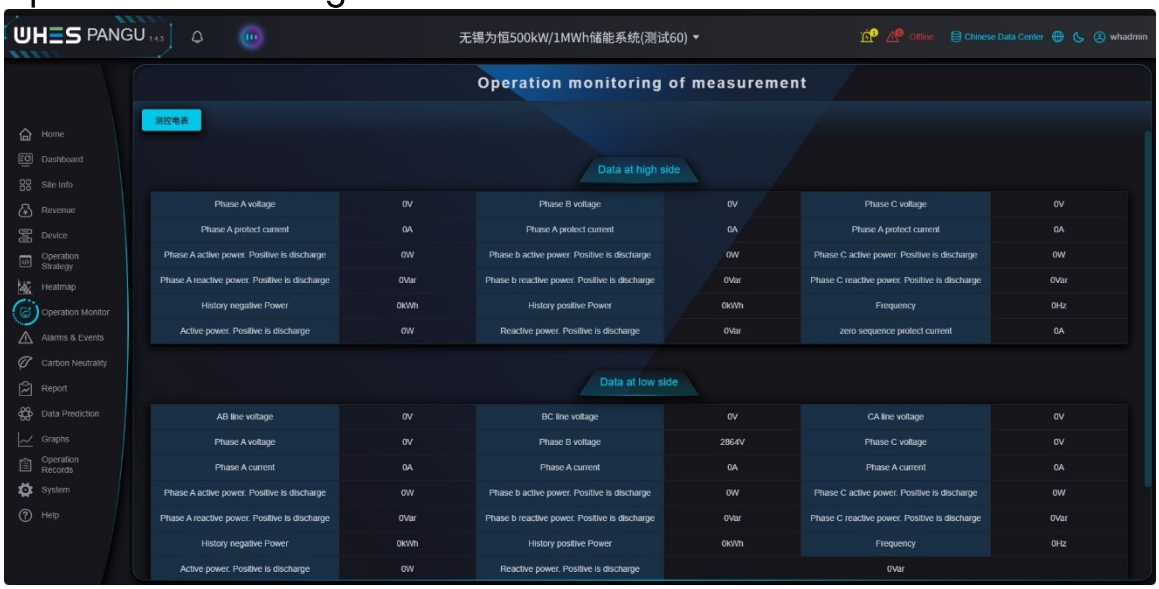




Functions:

1. Real-time monitoring of air conditioning temperature, humidity and all operational state.
2. Real-time monitoring of all operating state of the fire protection system.

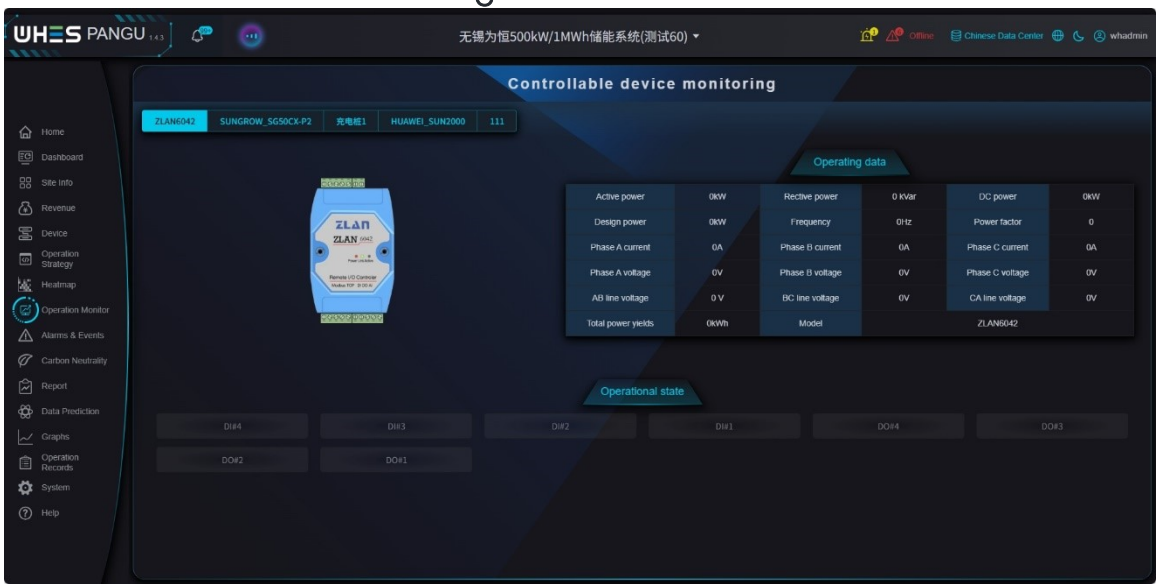
Operation monitoring of measurement



Functions:

It supports to monitor and control the high-voltage side meter monitoring data, low-voltage side meter monitoring data and transformer temperature data of the electric meter.

Controllable device monitoring



It supports to monitor the name, operating data and operating status of controllable devices.

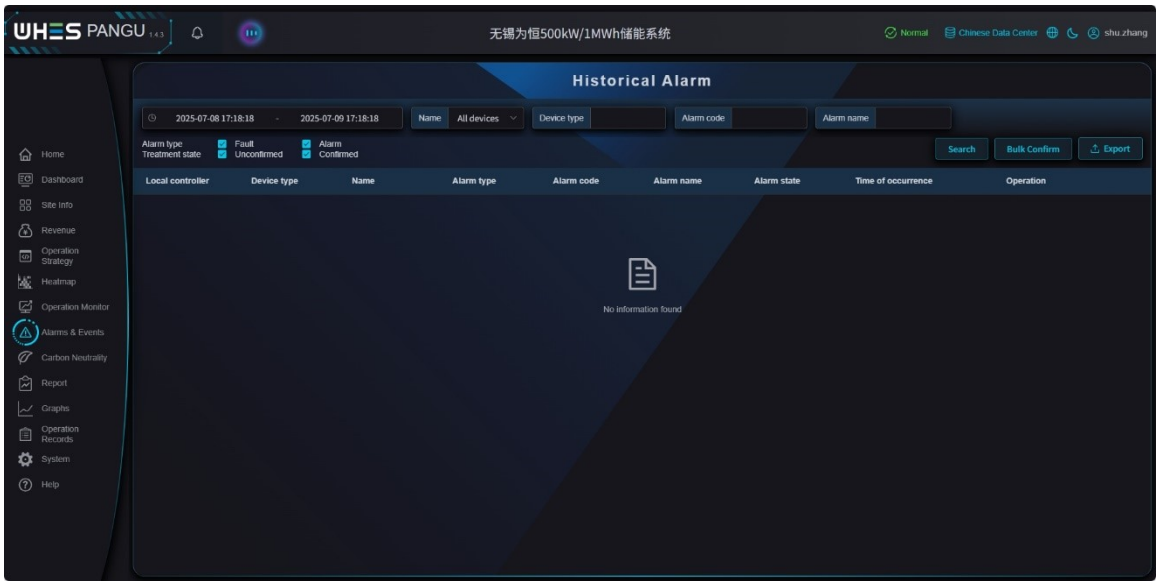
Meter monitoring

Functions:

It supports to monitor real-time operational data and status of all electricity meters

Alarms & Events

Historical Alarm

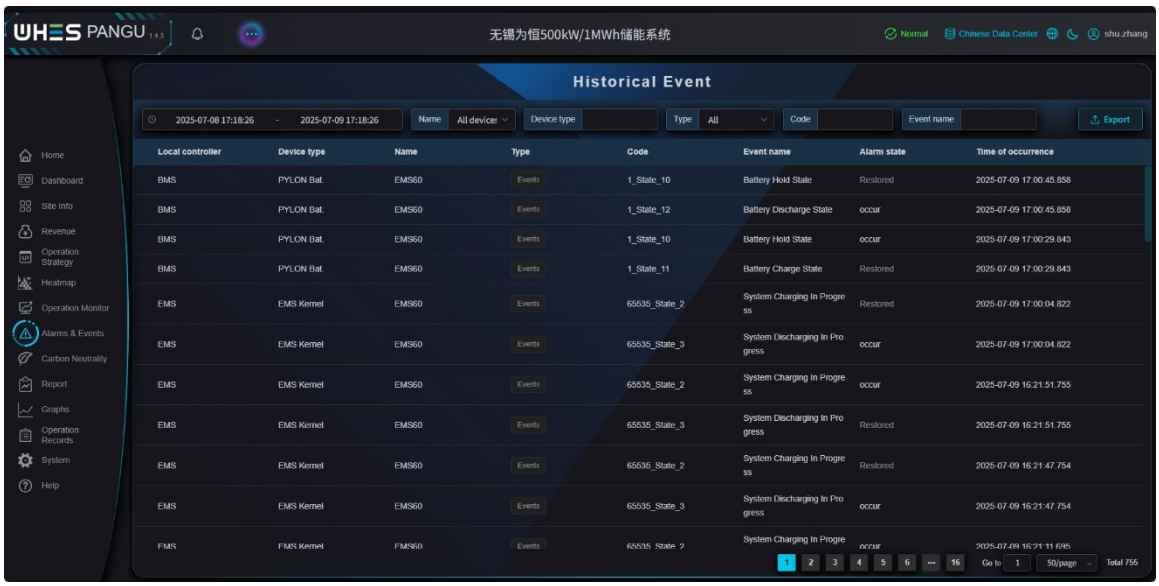


Functions:

1. Search: Support search historical alarm information by time period, device name, alarm name, alarm code and device type.

2. Alarm type/treatment state: Support filtering alarm information by checking "alarm type, alarm processing state".
3. Bulk confirm: Check multiple alarms and click bulk confirm to confirm the selected alarms at the same time.
4. Export: Export alarm information to Excel.

Historical Event

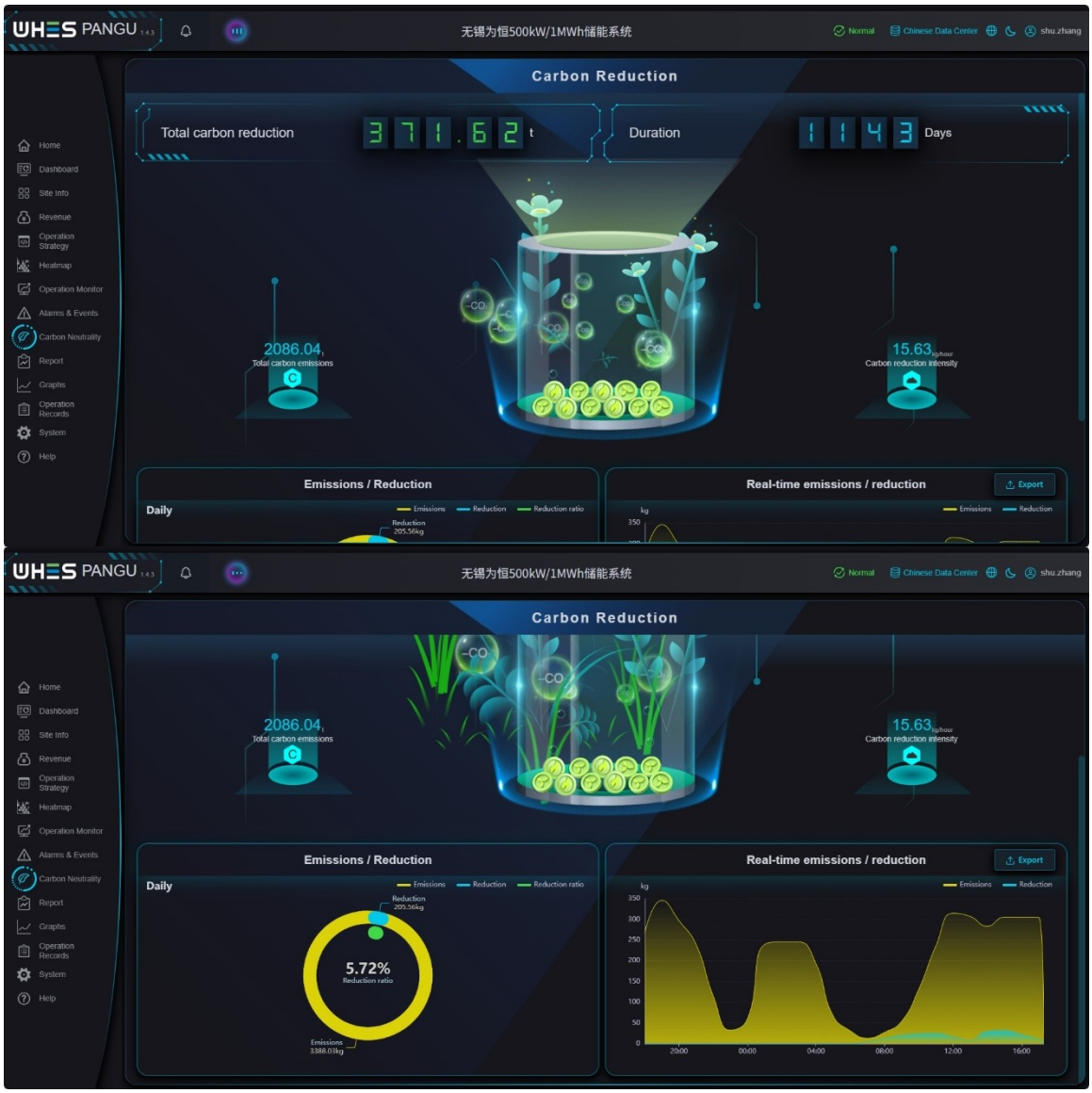


Functions:

1. Search: Support search historical events by time period, device name and event type.
2. Export: Click the Export button to export the event information to Excel.

Carbon Neutrality

Carbon Reduction



Functions:

1. This module contains carbon neutral related indicators for the power plant, including carbon emissions, emission reductions, duration days, carbon reduction intensity, carbon reduction ratio and comparison of real-time carbon emissions and emission reductions.
2. Carbon emissions/ reduction donut chart: contains the carbon emissions, carbon emission reductions and the percentage of emission reductions for the day.

3. Real-time emissions/ reduction line graph: compares a real-time comparison of today's carbon emissions and reductions.

Carbon Footprint

Functions:

The module mainly contains the monthly and annual carbon footprint, which can accurately review the carbon emission and reduction of each day.

Report

Daily Report

Functions:

1. Search: Search the daily total PV power generation, total power from grid, total grid feed-in, total power consumption, total battery charge, total battery discharge, total alarms, total faults. And PV power generation, power from the grid, grid feed-in, power consumption, battery charge and battery discharge of each hour of the day.
2. Export: Export data to Excel.

Monthly Report

Functions:

1. Search: Search the monthly total PV power generation, total power from grid, total grid feed-in, total power consumption, total battery

charge, total battery discharge, total alarms, total faults. And PV power generation, power from the grid, grid feed-in, power consumption, battery charge and battery discharge of each day.

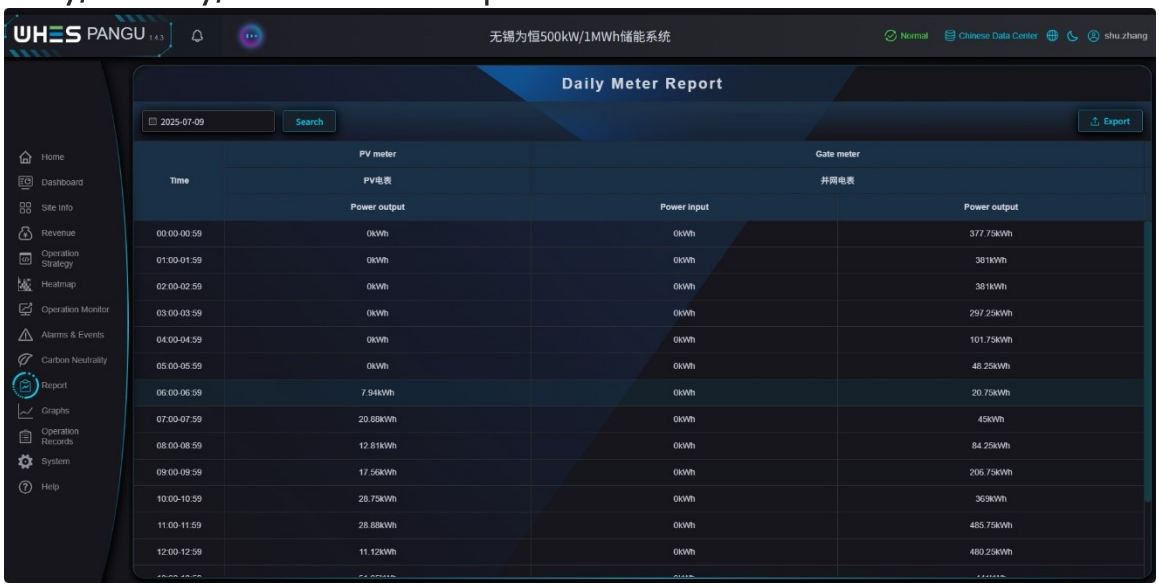
2. Export: Export data to Excel.

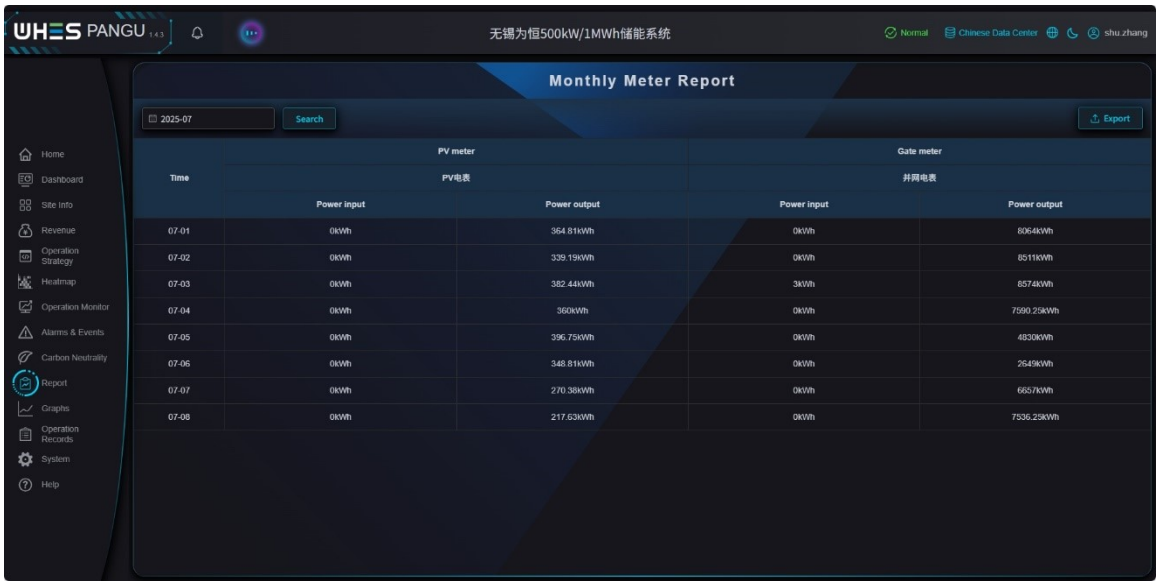
Annual Report

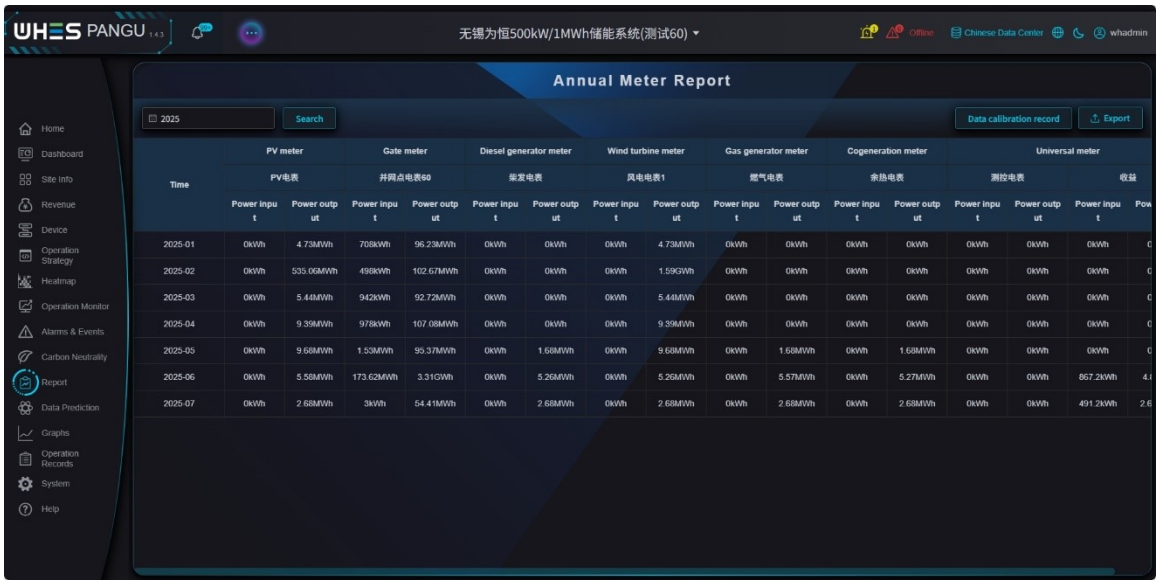
Functions:

1. Search: Search the annual total PV power generation, total power from grid, total grid feed-in, total power consumption, total battery charge, total battery discharge, total alarms, total faults. And PV power generation, power from the grid, grid feed-in, power consumption, battery charge and battery discharge of each month.
2. Export: Export data to Excel.

Daily/Monthly/Annual meter report







Functions:

1. Query: Query the PV meter discharge and the grid point meter power intake and feed-in at each time period of the day according to the selected date.
2. Query: Query the PV meter discharge and grid point meter power intake and feed-in for each day of the month according to the selected date.
3. Query: Query the PV meter discharge and grid point meter power intake and feed-in for each month of the year based on the selected date.
4. Export: Export the query data to Excel.

Monthly Meter Reading Report

Functions:

1. Query: Query the meter's in/out power readings at 0:00 every day and the in/out power of the day according to the selected month.
2. Export: Export the query data to Excel.

Annual Meter Reading Report

Functions:

1. Query: Query the meter's in/out power readings at 0:00 on the 1st of each month and the monthly in/out power according to the selected year.
2. Export: Export the query data to Excel.

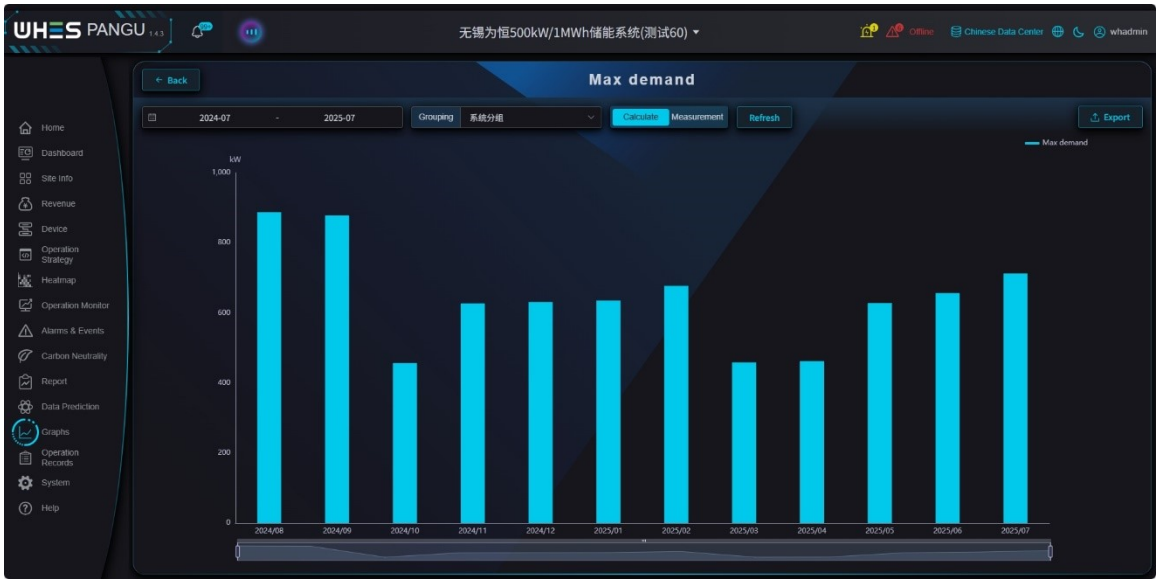
Graphs

Demand Power

Functions:

1. The page contains: actual demand power, original demand power, control demand power, charge and discharge power, as well as the distribution of peak and valley levels at each time period.
2. Search: Support searching demand power curve by time period.
3. Export: Export demand power data to Excel.

Max Demand



Functions:

1. The page contains the maximum demand for the last 12 months for the corresponding group.
2. Search: Support searching the maximum demand by time period.
3. Export: Export the maximum demand data to Excel.

On-grid power curve

Functions:

1. The interface includes: EMS active power, EMS reactive power,Target for grid connection point control,real power,original power, load active power, SOC.

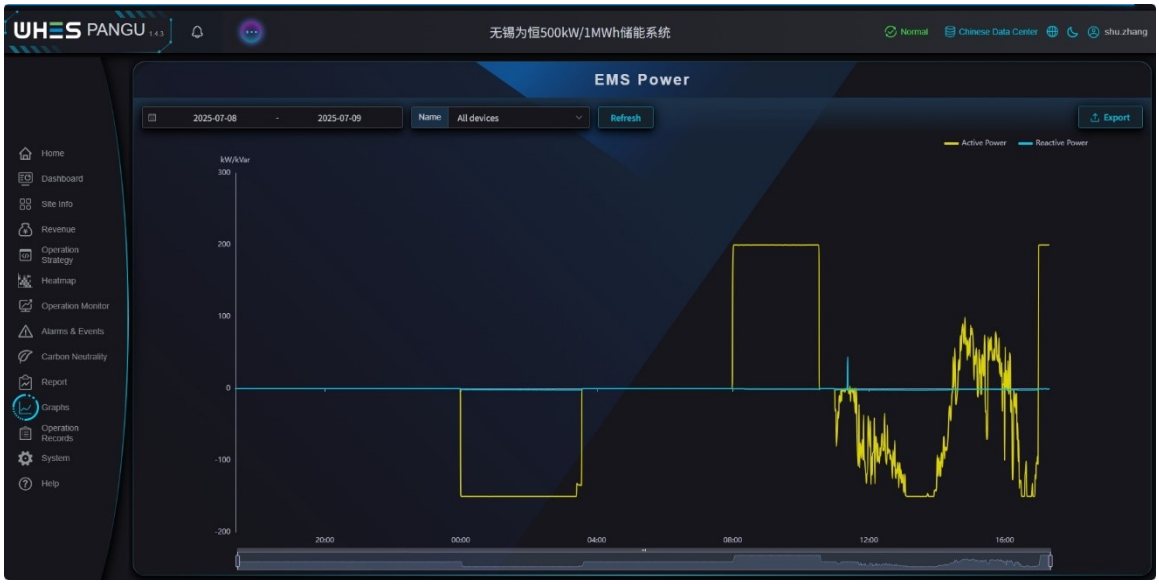
2. Query: Support query of grid connection point power curve by time period.
3. Export: Export grid connection point power data to Excel.

Charge/Discharge Power

Functions:

1. This page contains charging and discharging power curve.
2. Search: Support to search the charging and discharging power curve by time period.
3. Export: Export charging and discharging power data to Excel.

EMS Power



Functions:

1. This page contains EMS active/reactive power curve.
2. Search: Support to search the power curve by time period.
3. Export: Export EMS power data to Excel.

Load Power

Functions:

1. This page contains load power curve.
2. Search: Support to search the load power curve by time period.
3. Export: Export load power data to Excel.

PV Power

Functions:

1. This page contains PV power curve.
2. Search: Support to search the PV power curve by time period.
3. Export: Export PV power data to Excel.

Grid Power

Functions:

1. This page contains grid power curve.
2. Search: Support to search the grid power curve by time period.
3. Export: Export grid power data to Excel.

Grid Power Factor

Functions:

1. This page contains grid power factor curve.
2. Search: Support to search the grid power factor curve by time period.
3. Export: Export grid power factor data to Excel.

BMS-SOC

Functions:

1. This page contains BMS-SOC curve.
2. Search: Support to search the BMS-SOC curve by time period.
3. Export: Export BMS-SOC data to Excel.

BMS-Voltage

Functions:

1. This page contains bms voltage power curve.
2. Search: Support to search the power curve by time period.
3. Export: Export bms voltage data to Excel.

Cell Voltage & Temperature

Functions:

1. This page contains cell voltage & temperature curve.
2. Search: Support to search the cell voltage & temperature curve by time period.
3. Export: Export cell voltage & temperature data to Excel.

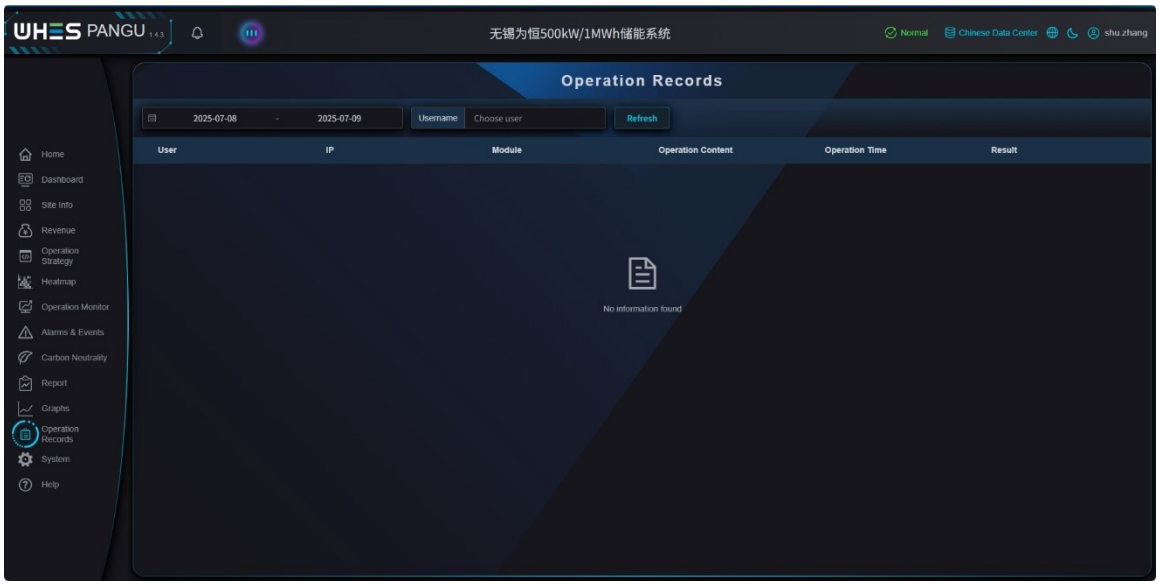
Customization

Functions:

1. This page shows the active power and reactive power curves by default.
2. It supports customizing the displayed curves. Click on "Data Configuration" to select the curves you want to display together.
3. It supports setting the unit and maximum value of the vertical axis. Click on "Y-axis Configuration".

Operation Records

Feature Screen:



Functions:

1. Support querying the operation records of the user themselves and the sub-accounts they have created.
2. The content of the operation record page includes: username, IP address, module, operation details, operation time, and operation result. It supports querying by time period and username.

System

System operation control

All devices

Functions:

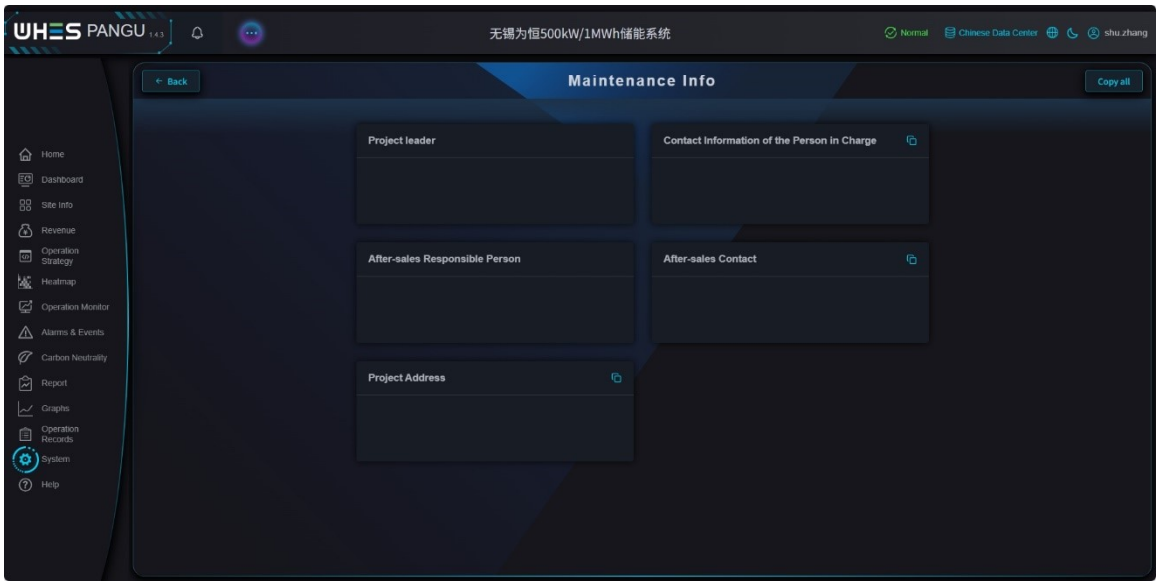
1. Used to batch start all devices and also able to switch to off-grid mode.
2. If you are about to maintain the field devices, you can turn on the function of field maintenance, and the system status will be switched to system maintenance after turning on the function. After finishing the maintenance, you can click to turn off the maintenance.

Single device

Functions:

1. Used to force the start-up of specified equipment.
2. Used to forcibly shut down a specified device.
3. Used to view system operating stutas.
4. Used to reset device.

Maintenance Info



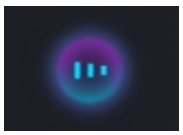
Functions:

Ability to view information on project leader, leader’ s contact information, after-sales leader, after-sales contact information, and project address, and can copy it.

PANGU AI

Functions:

1. Hover and click the button in the upper left corner to enter PANGU AI.



2. You can ask about income, battery information, warning information, etc. PANGU AI will analyze and answer.
3. You can click the "Deep Thinking" button to turn on the deep thinking mode.

Help

Functions:

1. Contains the PANGU OS User Manual, where you can view an introduction to the various features of PANGU.
2. Contains the Service Agreement and Privacy Policy, which you need to read and agree to before you can use PANGU, and which can be accessed at any time in the Help section.

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