IDZ-EMS

Software Function Specification

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Contents

1. Overview 3
2. Login and System Interface 3
   - 2.1 Login Method 3
   - 2.2 System Interface Layout 4
     - 2.2.1 Navigation Bar 4
     - 2.2.2 Content Area 4
3. Detailed Introduction to Functions 4
   - 3.1 Home 4
   - 3.2 Real-time Monitoring 7
     - 3.2.1 Real-time Dashboard 8
     - 3.2.2 Device Monitor 11
     - 3.2.3 Data Query 16
     - 3.2.4 Online Status 18
     - 3.2.5 Electricity Statistics 20
   - 3.3 Data Analysis 21
     - 3.3.1 Data Analysis 22
     - 3.3.2 Branch Energy Loss 23
     - 3.3.3 TOU Electricity 25
     - 3.3.4 Categorical Analysis 27
     - 3.3.5 Energy Flow 31
     - 3.3.6 Automatic Billing 34
   - 3.4 Alarm Management 36
     - 3.4.1 Alarm Management 36
     - 3.4.2 Custom Alarm 37
     - 3.4.3 WorkOrder Management 39
   - 3.5 System Settings 41
     - 3.5.1 Company Information 41
     - 3.5.2 Layer Settings 43
     - 3.5.3 Electricity Prices 44
     - 3.5.4 Device Settings 47
     - 3.5.5 Position Settings 49
     - 3.5.6 Global Settings 51
     - 3.5.7 User Settings 52
     - 3.5.8 Role Settings 55
     - 3.5.9 Data Dictionary 56

1. Overview

This instruction document is intended to provide you with a detailed introduction to the various functions, operation methods and usage procedures of the IDZ-EMS website. It aims to help you quickly get familiar with and proficiently use the system, ensuring the efficient and accurate implementation of power statistics and settlement work. Whether you are an enterprise manager, a power operation and maintenance personnel, or a financial staff responsible for electricity fee calculation, you can easily master the usage skills of the website through this document.

2. Login and System Interface

2.1 Login Method

Access the Website URL

Open your commonly used browser (mainstream browsers such as Chrome, Firefox, and Edge are recommended), and enter the official URL of the electricity quantity function statistics and settlement website [http://103.129.80.195/#/login] in the address bar.

Enter Account and Password

After accessing the website page, you will see the "Account" and "Password" input boxes. Enter the account registered in the system and the corresponding password, then click the

"Login" button. If you are logging in for the first time or have forgotten your password, you can contact the administrator of the website operator for assistance.

2.2 System Interface Layout

2.2.1 Navigation Bar

Located at the top of the page, it contains links to major functional modules such as "Home", "Real-time Monitoring", "Data Analysis", "Alarm", and "System Settings". By clicking on the options in the navigation bar, you can quickly switch to different functional pages.

2.2.2 Content Area

Main Content Area

The large area in the middle of the page serves as the content display and operation area. When you click on a certain functional module in the navigation bar, the corresponding functional page will be loaded and displayed in this area, where you can perform specific operations such as data entry, query, and editing.

Sidebar

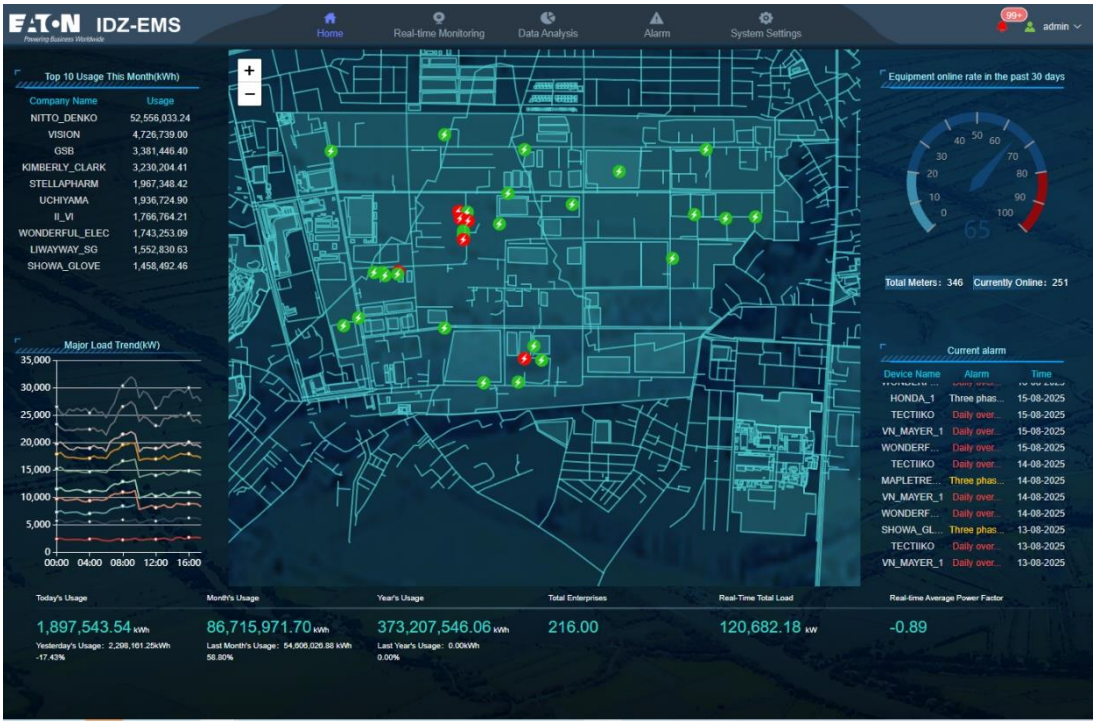
Some functional pages may display a sidebar on the left, which is used to show the sub-functions or related shortcut operation links under the functional module. For example, on the "Alarm" page, the sidebar will list sub-function links such as "Alarm Manage", "Custom Alarm" and "WorkOrder Manage", making it easy for you to quickly find the required operations.

Status Bar

Located on the right side of the top of the page, it is used to display some status information of the system, such as the currently logged-in user and alarm prompts.

3. Detailed Introduction to Functions

3.1 Home



1. Access Path

After logging into the system, you will be automatically redirected to Home. You can also access Home by clicking the "Home" option in the navigation bar.

2.Function Positioning

The electricity meter management function is mainly used for comprehensive management of the electricity meter information involved in the system, including operations such as entry, query, modification, and deletion of the basic information of electricity meters. It ensures the accuracy and completeness of electricity meter information and provides basic data support for subsequent collection, statistics, and analysis of power usage records.

Left data Display Area

1.Top 10 Usage This Month section

Function Positioning： Focus on key electricity-consuming entities in the region and present information on monthly high-energy-consuming objects.

Function Details： Display the top 10 electricity-consuming entities (such as enterprises) in terms of monthly electricity consumption in the form of a list, facilitating users to quickly identify major electricity consumers in the region and providing key basis for energy efficiency supervision and power resource allocation. It can assist in identifying enterprises with abnormal electricity consumption or high energy consumption, and subsequently carry out energy-saving analysis, cost control and other work for these entities.

2.Major Load Trend Section

Function Positioning: Present the time variation law of regional electricity load to assist power dispatching and planning.

Function Details: Through line charts, show the change trends of major electricity loads in different time periods (such as 0:00 - 12:00, etc.). Line charts of different colors can correspond to different electricity consumption scenarios or user groups. It helps users insight into the fluctuation characteristics of regional electricity load, predict peak and off-peak electricity consumption periods, and provides data support for the optimization of power dispatching strategies (such as adjusting power generation, arranging staggered electricity consumption) and power grid capacity planning, so as to ensure stable power supply.

3.Daily/Monthly/Yearly Usage Section

Function Positioning: Construct a time-dimensional data system for regional electricity consumption to serve long-term energy efficiency management and planning.

Function Details: Display electricity consumption data of today, yesterday, this month, last month, this year, and last year from different dimensions, as well as month-on-month changes (such as yesterday's electricity consumption and its change rate compared with today, last month's electricity consumption and its change rate compared with this month, etc.). It presents the trend of electricity consumption from multiple time cycles including day, month and year, providing support for the formulation of energy efficiency management plans (such as annual electricity budget planning, monthly energy-saving target setting), electricity cost accounting, and long-term power resource allocation strategies.

Central Map Area

1.Middle Geographic Visualization Area

1.1 Function Positioning

Intuitively present the geographical distribution and real-time status of regional electricity-consuming equipment, helping to improve operation and maintenance efficiency.

1.2 Function Details

Taking the regional map as the carrier, the device status is distinguished by color labels (e.g., green = normal operation, red = alarm). When hovering over the device logo, you can view the basic information of the device (name) and real-time parameters (latest reading, daily usage, update time, status). This helps operation and maintenance personnel quickly locate abnormal devices, shorten the fault response time, and optimize the inspection and maintenance processes of power facilities.

Right-side Equipment and Alarm Area

1.Equipment online rate in the past 30 days section

1.1Function Positioning

This is a device online rate monitoring page, which is used to intuitively display the online status data of electrical (or other industries') equipment over the past 30 days. It helps operation and maintenance personnel quickly grasp the overall online health of the equipment. As a core module of the Energy Management System (EMS) or equipment monitoring platform, it supports the "equipment status perception - operation and maintenance decision-making" process.

1.2 Function Details

A dashboard is used to display the online rate over the past 30 days (currently 64.05), along with the total number of devices (346) and the current number of online devices (246), so as to reflect the overall stability of the devices.

2.Current Alarm Section

2.1 Function Positioning：

Push device fault information in real time to ensure the stable operation of the power system.

2.2 Function Details

Device names, alarm types (such as three-phase voltage, three-phase current, offline, etc.) and alarm times are displayed in the form of a scrolling list. This enables accurate identification of equipment faults, facilitating timely handling by operation and maintenance personnel (such as remote restart, on-site maintenance), reducing the scope of fault impact, and avoiding accidents such as large-scale power outages.

3. Bottom Comprehensive Operation Zone

3.1 Function Positioning

Macroscopically present the key indicators of regional electricity consumption operations to support overall decision-making.

3.2 Function Details

Summarize and display data such as Today's Usage, Month's Usage, Year's Usage, Total Enterprises, Real - Time Total Load, Real - time Average Power Factor, etc.
It outlines the overall panorama of regional electricity consumption operations from a macro perspective, providing multi-dimensional data support for the optimal allocation of power resources (such as allocating power supply according to demand), energy efficiency improvement strategies (such as power factor optimization schemes), and cost accounting.

3.2 Real-time Monitoring

1 Entry Path

After logging into the system, click the "Real-time Monitoring" option in the navigation bar to enter Real-time Monitoring. In the sidebar of the Real-time Monitoring page, you can select different sub-functions to operate, and the default sub-menu entered is Real-time Dashboard.

3.2.1 Real-time Dashboard

Function Positioning

As one of the core functional modules of the EATON IDZ - EMS system, it focuses on the monitoring of real-time operation data of the power system. It provides operation and maintenance personnel and power managers with real-time views of equipment operation status, power quality, and energy consumption data, supporting the real-time monitoring, fault early warning, energy efficiency analysis and other work of the power system. This ensures stable and efficient power supply and helps to timely detect and handle abnormalities in power operation.

Function Details

1. Left-side Equipment Navigation Area

Equipment hierarchy display: Power equipment (such as various probes and devices under groups like "SS B1 - 2" and "CA - F1") is listed in a tree structure according to dimensions such as region and category. This clearly presents the distribution and ownership of power equipment, facilitating quick positioning of target monitoring equipment.

2. Search and filter

A "Filter by entering keywords" search box is provided, which supports quickly filtering and finding specific devices through keywords such as device names and numbers. This improves the efficiency of device searching, and is especially suitable for large-scale power equipment monitoring scenarios.

3. Top Key Data Overview Area

3.1Realtime Power (kW)

It displays the total active power of current power equipment in real time, reflecting the real-time load of the power system. It is a key indicator for judging the operating load status of the power system and helps identify peak and valley load periods.

3.2Power Factor

Display the real-time power factor, which reflects the efficiency of electrical energy utilization in the power system. If the power factor deviates from the normal range (such as approaching abnormal values of -1 or 1), it may indicate problems such as abnormal reactive power compensation of equipment and abnormal load characteristics, which require attention and investigation.

3.3Daily Usage (kWh)

Count the accumulated electricity consumption of the day, present the power consumption from a daily perspective, assist in analyzing daily electricity consumption patterns, calculate daily electricity costs, compare differences in electricity consumption on different dates, and identify abnormal fluctuations in daily electricity consumption.

3.4Monthly Usage (kWh)

Summarize the accumulated electricity consumption of the current month, which is used for monthly electricity consumption statistics and energy efficiency analysis. It compares electricity consumption in different months and supports work such as monthly electricity budget control and energy efficiency assessment.

4. Central Power Parameter Monitoring Area

4.1 Three - phase Current

In the form of line charts, it displays the real-time curves of the changes in A, B, and C three-phase currents over time. By observing the shape and amplitude differences of the three-phase current curves, it can determine whether there are abnormalities such as three-phase imbalance (e.g., a certain phase current being continuously too high or too low) and current sudden changes (precursors of short circuits or equipment failures). It is one of the core indicators for monitoring the operating status of power equipment.

4.2 Three-phase Voltage

(Three-phase voltage): Similarly, the real-time changes of A, B, and C three-phase voltages are presented in the form of line charts. It monitors whether the three-phase voltages are stable within the rated voltage range. Excessive voltage fluctuations or deviations (such as a sudden rise or drop in a certain phase voltage) may affect the normal operation of equipment and even damage electrical equipment, requiring timely intervention.

4.3 Electricity Consumption Comparison

The hourly electricity consumption (kWh) of yesterday (Yesterday, yellow bar) and today (Today, light blue bar) is presented for comparison, covering the entire day from 00:00 to 23:00. It clearly shows the electricity consumption differences between different time periods of the same day and the corresponding time periods of today and yesterday.

Day: Selected by default, it displays the hourly electricity consumption comparison between the current day and yesterday, focusing on the daily electricity consumption fluctuations and the differences between the two days. It is suitable for analyzing short-term electricity consumption patterns and identifying abnormal daily electricity consumption (such as a sudden increase or decrease in electricity consumption during a certain period today).

Month: After switching, it presents the daily electricity consumption comparison between the current month and the previous month (e.g., 1st - 30th/31st), which is used for monthly electricity consumption trend analysis and as a reference for monthly electricity cost accounting.

Year: After switching, it shows the monthly electricity consumption comparison between the current year and the previous year (e.g., January - December), assisting in conducting annual energy efficiency evaluations and comparing electricity consumption patterns across years.

4.4 TOU Trend

According to the time-of-use electricity price mechanism, the electricity consumption (kWh) during peak (Peak, blue), normal (Normal, orange), and off-peak (Off Peak, green) periods is distinguished by bar charts of different colors, covering the entire day from 00:00 to 23:00. It intuitively presents the matching degree between the electricity load in each period and the time-of-use electricity price strategy.

Operation Method

1. Equipment Selection Operation

1.1 Device Search

Enter keywords such as the device name or number in the search box on the left, press the Enter key to filter out matching devices, and click the device name. The monitoring area on the right will load the real-time data associated with the device (if the device supports multi-parameter monitoring, the corresponding curves and data will be updated synchronously to show information such as the three-phase current and voltage of the device).

1.2 Device switching

In the left-side tree-structured equipment list, click on different device names, and the monitoring view on the right will switch to the real-time operating data of the corresponding device. This enables quick switching and monitoring of multiple devices, facilitating the comparison of differences in operating parameters between different devices.

3.2.2 Device Monitor

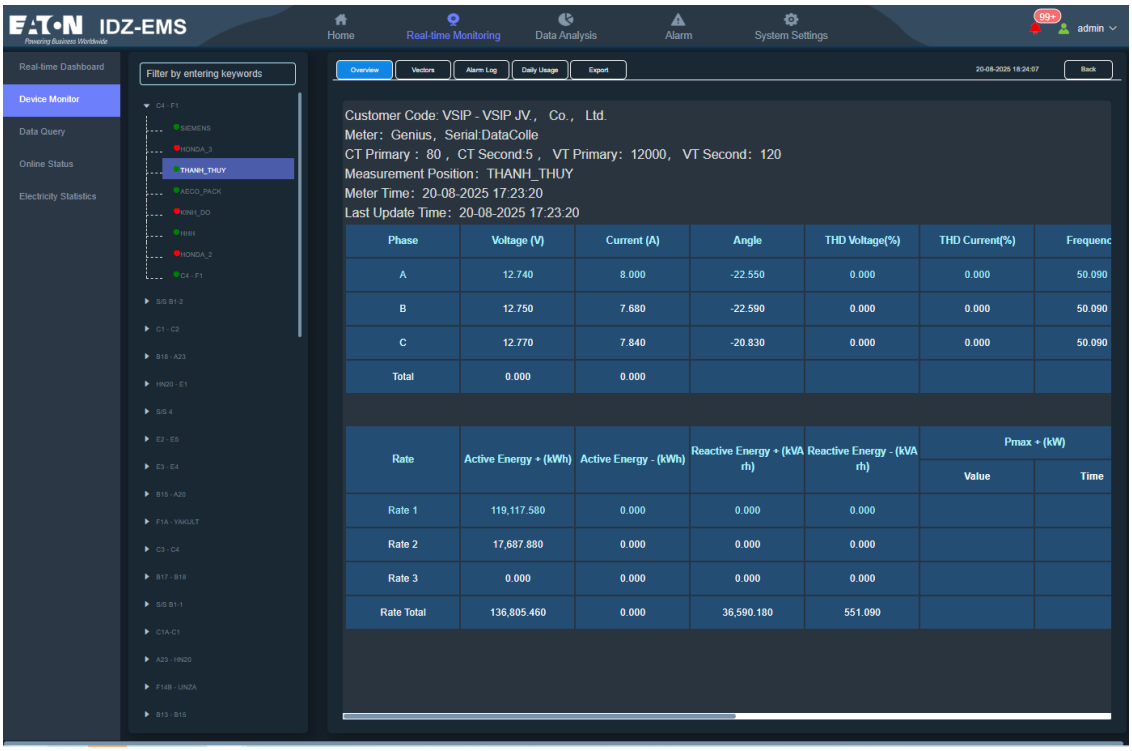
Function Positioning

Centering on the full-life-cycle monitoring and management of power equipment, it provides capabilities such as real-time status checking of equipment, electrical parameter analysis, alarm tracing, electricity consumption data statistics, and data export. It helps operation and maintenance personnel fully grasp the operational health of equipment, quickly locate faults, analyze energy efficiency, and supports the reliable operation and optimized decision-making

of power systems.

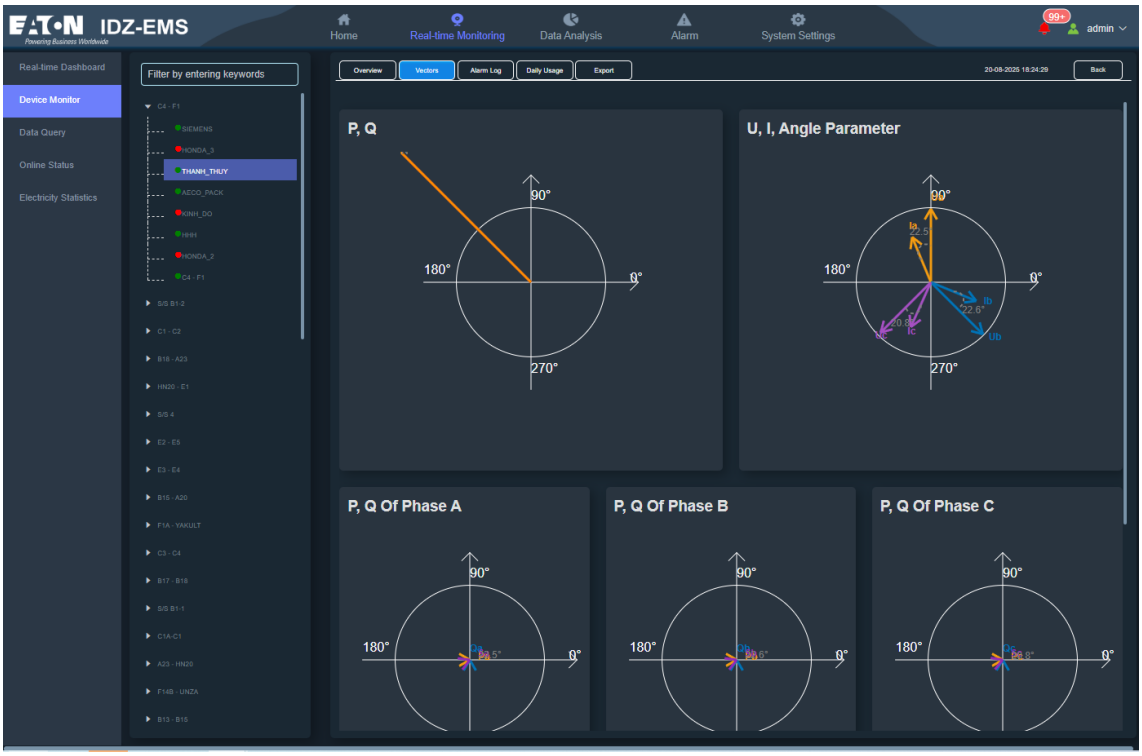
Function Details

1. Overview



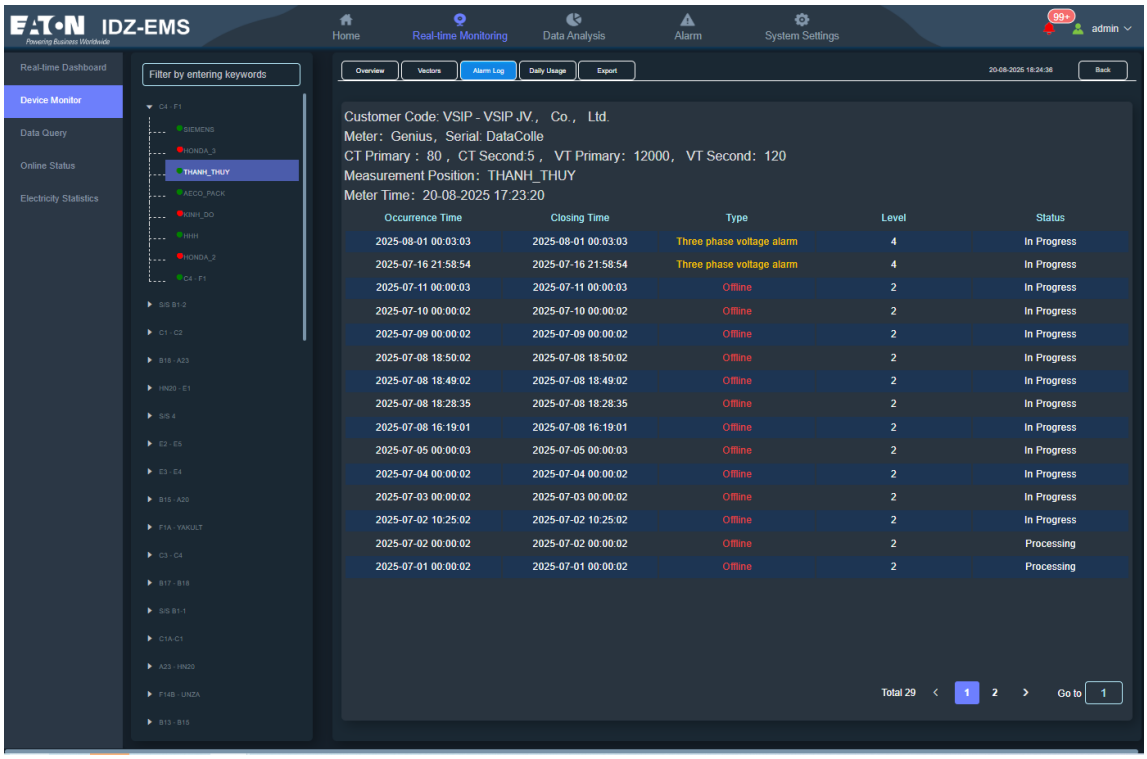
It presents basic equipment information (customer code, electricity meter model, CT/VT transformation ratio, etc.), real-time electrical parameters (three-phase voltage, current, power factor, etc.), and energy statistics (active/reactive electrical energy). It enables one-stop access to the core status of equipment, facilitating quick identification of parameter abnormalities (for example, voltage and current being 0 may indicate that the equipment is offline), and serves as an entry point for fault diagnosis.

2. Vectors



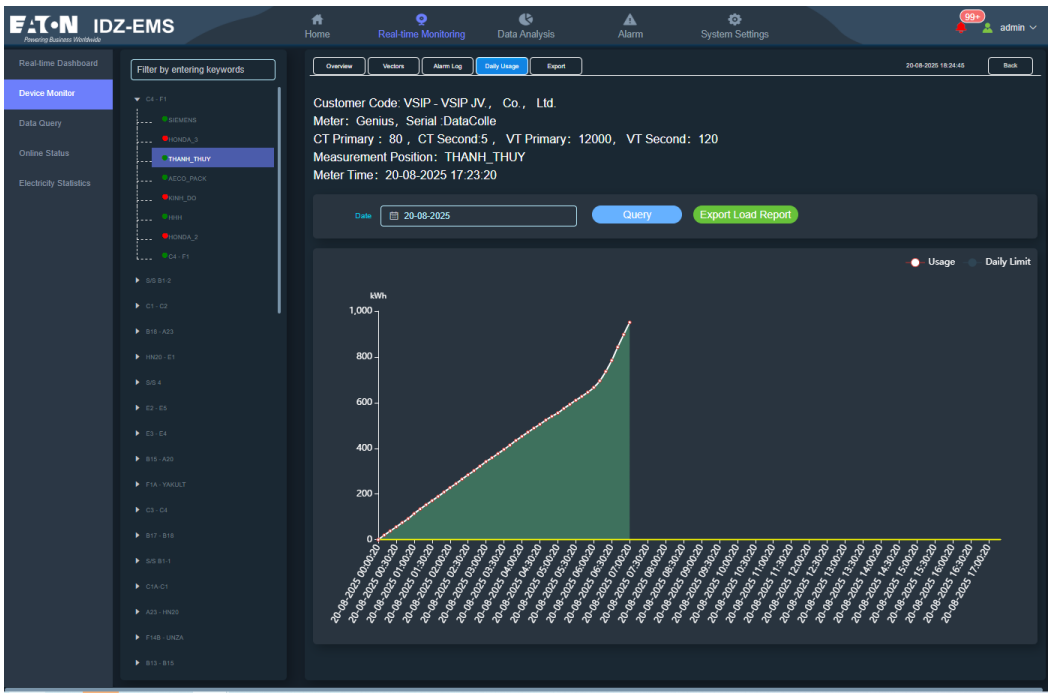
In the form of polar coordinate vector diagrams, it displays the P-Q (active-reactive) relationship, U-I-Angle (voltage-current-angle) relationship, and the P-Q relationship of each phase, intuitively presenting the correlation between the phase and amplitude of electrical quantities. It is applied in professional power analysis scenarios to assist in judging power quality issues (such as abnormal power factors and three-phase imbalance) and locating abnormalities in equipment/load characteristics.

3. Alarm Log



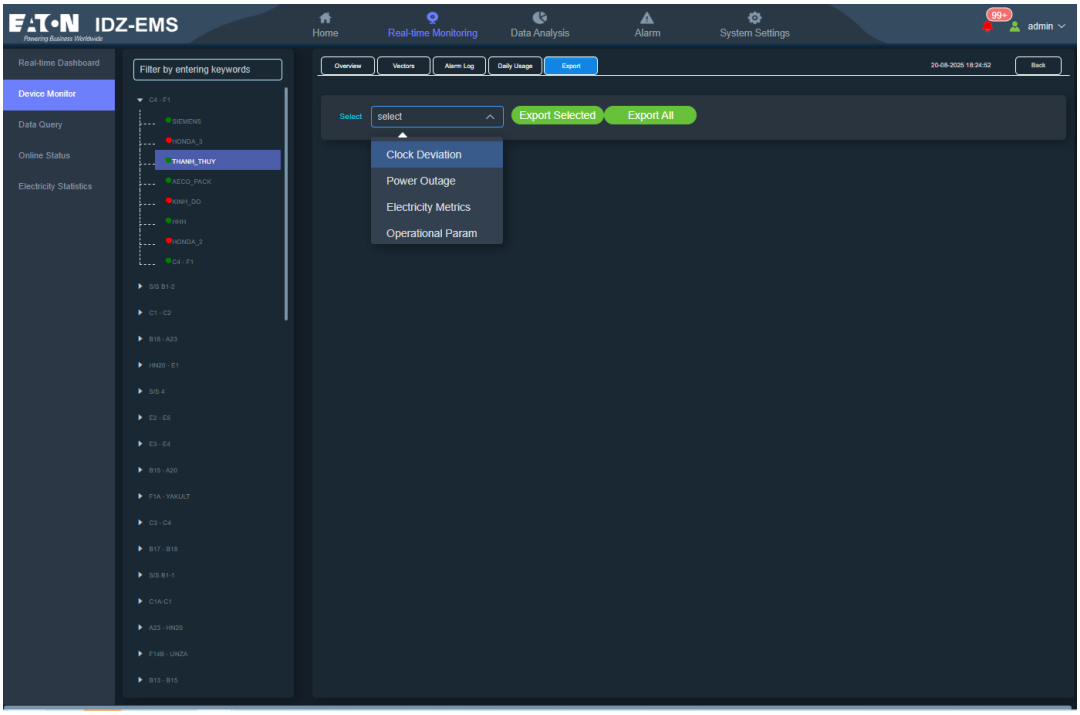
Record the historical alarms of the equipment (occurrence time, end time, type, level, status), and support pagination viewing. It traces back the equipment failure history, analyzes the frequent alarm periods/types, and assists in optimizing operation and maintenance strategies (such as targeted inspections) and verifying the effectiveness of fault repairs.

4. Daily Usage



Display the daily electricity consumption curve of the equipment (actual consumption VS daily

limit), supporting date query and report export. It analyzes the daily electricity consumption pattern of the equipment, identifies the time periods when electricity consumption exceeds the limit, and provides a basis for energy efficiency management and cost optimization (such as adjusting the operation sequence of high-energy-consuming equipment).



5. Export

It provides four types of data export options: Clock Deviation, Power Outage (power outage records), Electricity Metrics (electricity metrics), and Operational Param (operational parameters), supporting "export selected" or "export all". It meets the needs of offline analysis and report compilation, such as exporting power outage records for fault review and electricity metrics data for energy efficiency audits.

Operation Method

1. Equipment Selection

Browsing and selection: Click on the device tree node on the left, and the monitoring data of the corresponding device will be loaded on the right.
Search and filter: Enter the device name/number in the top search box to quickly filter the list, and click the target device to switch data.

Tab Function Operation

Overview

View the data directly. If there is an abnormal parameter (for example, the prompt "187 days no values" indicates that the device has had no data for a long time), confirm whether the device is offline or faulty in combination with on-site checks....

Vectors

Observe the phase/amplitude of the vector diagram:
If the P-Q vector deviates too far from the origin → abnormal active/reactive power;
If there is a large difference in the three-phase P-Q diagrams → three-phase imbalance.
Hover the mouse to view specific values, which assists in quantitative analysis.

Alarm Log

Browse alarms by page: Pay attention to "Status" to determine whether they have been handled, and analyze fault patterns in combination with "Occurrence Time" (for example, if offline alarms occur frequently during a certain period, check the communication link).

Daily Usage

Query: Select a date → click "Query" to load the corresponding curve;
Export report: Click "Export Load Report" to generate a daily electricity consumption analysis document for reporting/archiving.

Export

Select the export type (e.g., "Power Outage") → click "Export Selected (selected devices)" or "Export All" → wait for the file to be generated and download it

3.2.3 Data Query

Function Positioning

As the core data query page of the EATON IDZ - EMS system, it focuses on the flexible retrieval and display of power equipment monitoring data. It supports precise filtering by equipment, time range, and data type, providing operation and maintenance personnel as well as energy efficiency analysts with historical data query services for power parameters (such as current, voltage, and power). It facilitates scenarios such as in-depth analysis of equipment operation trends, power quality evaluation, and fault tracing, and serves as a data support platform for refined management and optimized decision-making of power systems.

Function Details

1. Filter Criteria Area

Meter (Equipment Selection): Select the target power equipment from the drop-down list (e.g., "ABBOTT_1") to limit the equipment scope for data query. It is applicable to focusing on data retrieval of a single or specific equipment in multi-equipment monitoring scenarios.
Time Range: Set the start (e.g., 06-08-2025) and end (e.g., 12-08-2025) times for data query through the date picker, accurately defining the time interval of historical data to meet the needs of analysis in different cycles (such as single-day or multi-day comparison).
Data Type Checkboxes: Provide checkboxes for "Current", "Voltage", "Power Values", "PF", "Energy Values", "Angle", "Frequency", "THD (V)", and "THD (I)". Users can check the data types they need to query as required, flexibly customize the query results, avoid interference from irrelevant data, and improve analysis efficiency.

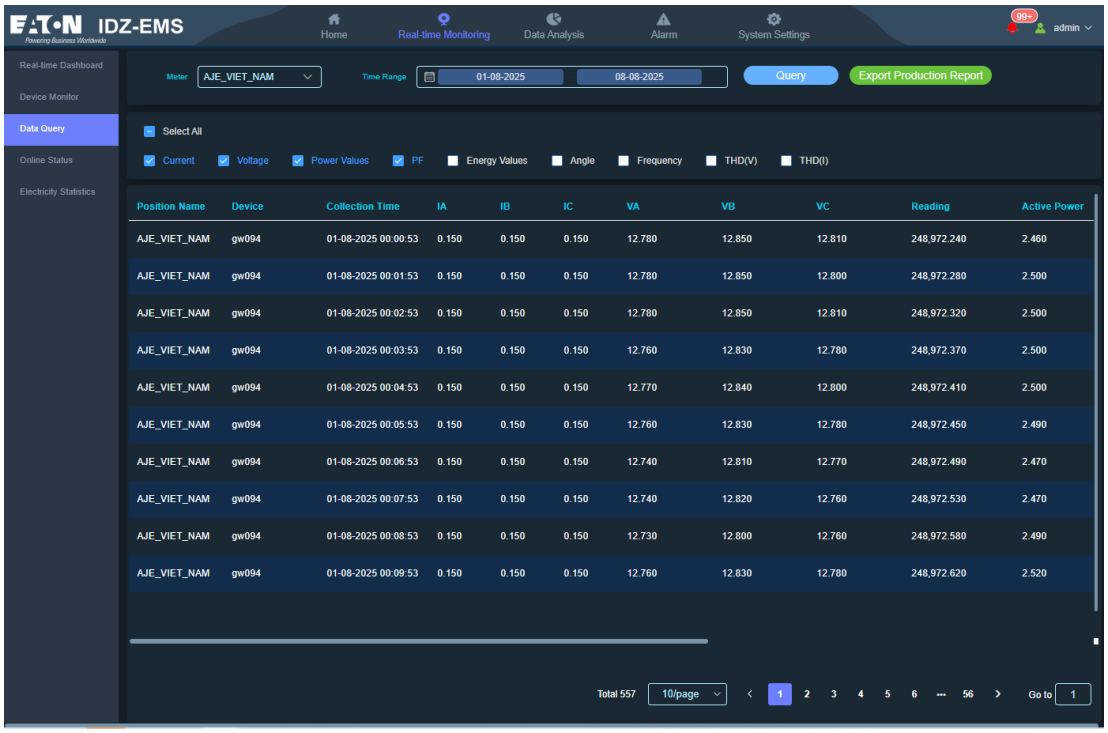
2. Data Display Area

The filtered monitoring data of power equipment is presented in tabular form, including:
Basic associated information: "Position Name (e.g., ABBOTT_1)", "Device (e.g., gw278)", "Collection Time (accurate to the minute, e.g., 06-08-2025 13:56:25)". These clarify the data ownership and collection time, providing a basis for data traceability and time-series analysis.
Electrical parameters: "IA/IB/IC", "VA/VB/VC", "Reading", "Active Power", "Reactive Power", etc. These comprehensively cover the key operating parameters of power equipment, supporting equipment status evaluation and power quality analysis (e.g., judging harmonic interference through THD data).

3. Data Operation Area

Query: After clicking, it retrieves and loads the corresponding power monitoring data from the system database according to the settings in the filter criteria area (equipment, time, data type), and refreshes the content in the data display area. It is the core operation to trigger data query.
Export Production Report: It supports exporting the query results as production report documents (such as Excel, PDF formats, etc.), facilitating offline analysis, data archiving, and cross-departmental collaboration (e.g., sending equipment historical data reports to the operation and maintenance team).

Operation Method



1. Data Query Process

Equipment and time filtering: Click the "Meter" drop-down box and select the target device (e.g., "ABBOTT_1");
Click the "Time Range" date picker and set the start and end dates respectively (e.g., 06-08-2025 to 12-08-2025).
Data type customization: Check the checkboxes of the data types to be queried (e.g., if focusing on current, voltage, and power values, check "Current", "Voltage", and "Power

Values").
Execute query: Click the "Query" button, and the system will load and display the power monitoring data that meets the conditions, with the corresponding results presented in the data display area.

2.Data Export Operation

After completing the data query and confirming that the content in the data display area is what you need, click the "Export Production Report" button, select the export format (if supported by the system), and save the generated production report file to your local device for subsequent analysis or sharing.

3. Browse by Page

Pagination functions ("Total 8297", "10/page", "page number switching") are provided at the bottom of the data display area. Click on page numbers (such as "2" or "3") or use "Go to" to jump to a specified page to browse more historical monitoring data. This is applicable to long-cycle and large-data-volume query scenarios, enabling page-by-page analysis of the changing trends of equipment operating parameters.

3.2.4 Online Status

Function Positioning

It focuses on the online status monitoring and historical status tracing of power equipment, supports the quick query of the current online/offline status of equipment and the status change records within a specified time range, helps operation and maintenance personnel grasp the dynamics of equipment connectivity, timely detect offline equipment, analyze the laws of status fluctuations, and ensure the integrity of data collection in the power monitoring system.

Function Details

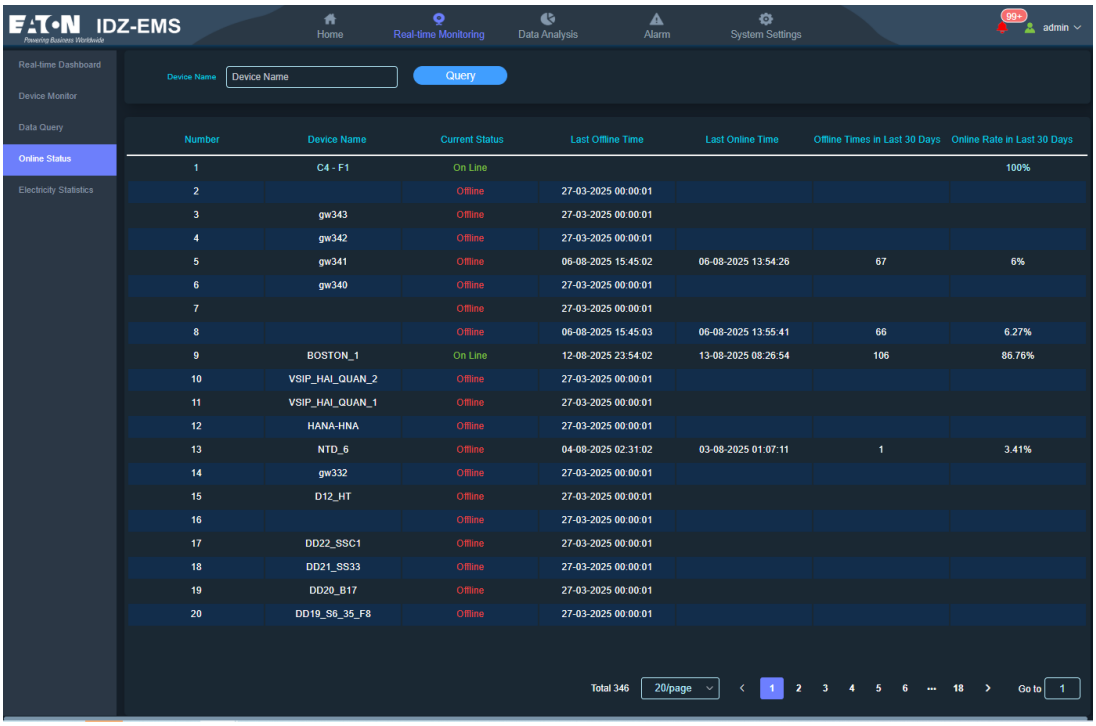
1. Device Online Status Query

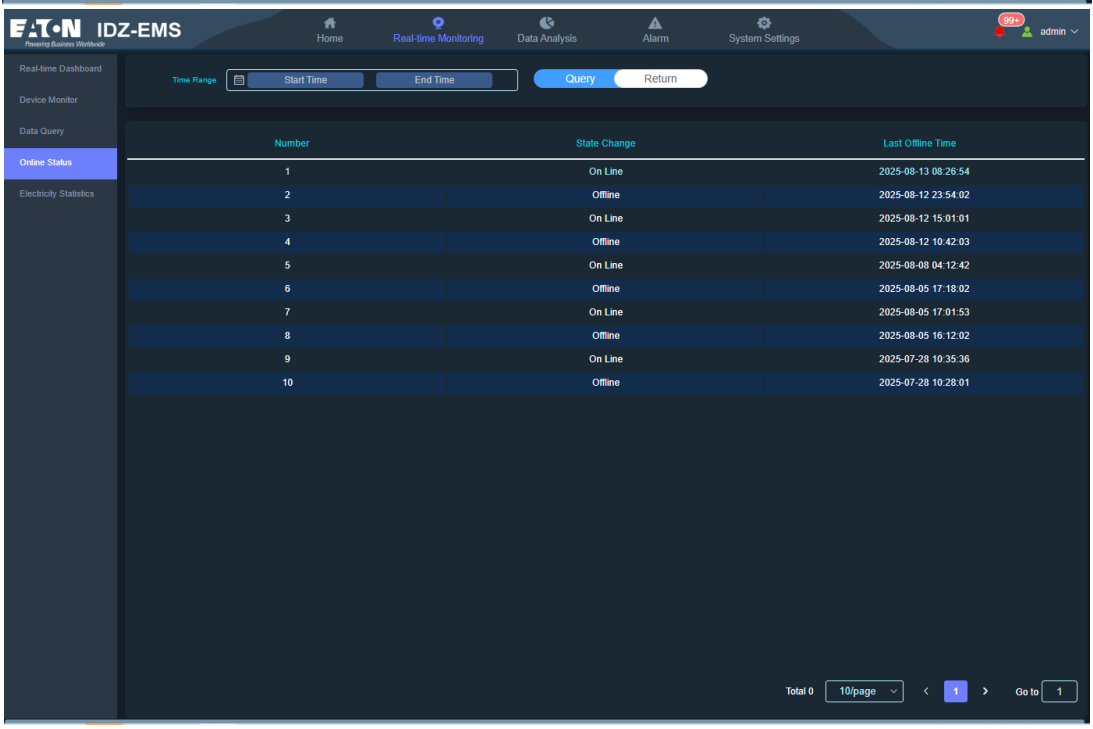
Function: Enter the device name (e.g., "C4") to query the current online status (Online/Offline) of the target device. It simultaneously displays the device number, the latest offline/online time, the number of offline occurrences within 30 days, and the online rate (some fields are temporarily empty due to incomplete data loading).
Value: Quickly locate offline devices (e.g., "C4 - F1" shows Offline), serving as an entry point for fault troubleshooting (such as checking device power supply and communication links).

2. Traceability of Equipment Status Changes

Function: For the queried equipment, display the status change records (On Line/Offline) and the latest offline time within a specified time range (e.g., "2025 - 07 - 03 to 2025 - 07 - 31"), presenting the history of equipment status fluctuations.
Value: Analyze the frequent offline periods of the equipment and the rules of status switching, helping to determine the type of fault (for example, intermittent offline may be caused by communication interference, and continuous offline may be a hardware failure).

Operation Method





Querying Device Online Status

Enter query criteria: Type the device name/number (e.g., "C4") in the "Device Name" search box.

Execute query: Click the "Query" button. The system will retrieve the current status data of the device, load and display information such as "Number", "Device Name", and "Current Status".

Tracing Device Status Changes

Trigger jump: In the query results shown in Figure 1, click the target device (e.g., "C4 - F1") to automatically jump to the page in Figure 2 with the device identifier carried over.

Set time range: Use the "Time Range" selector to set the query period (e.g., start date "2025 - 07 - 03" and end date "2025 - 07 - 31").
Execute trace query: Click the "Query" button to load records of "State Change" and "Last Offline Time" of the device within the specified time; click "Return" to go back to the page in Figure 1.

3.2.5 Electricity Statistics

Function Positioning

Focusing on multi-dimensional statistics and visual analysis of electricity consumption data, it covers the number of electric meters, monthly/weekly/daily electricity consumption and cost trends, and supports accurate query by time range and electric meter equipment. It provides data support for energy efficiency management, cost control, and electricity planning, helping users quickly gain insights into electricity consumption patterns and abnormal fluctuations, and optimize the allocation of power resources.

Function Details

1. Top Overview Area

Meter Count: Displays the total number of electric meters within the current statistical range (e.g., 346). The statistical dimension can be switched (e.g., filtering meter groups by region or type) through the drop-down filter ("All"), making the scale of statistical objects clear.
Month’s Usage: Presents the cumulative electricity consumption of the current month (83,876,721.88 kWh) and the increase compared with the previous month (+53%). The corresponding electricity fee amount is in parentheses, reflecting changes in monthly electricity load and costs.
Week’s Usage: Shows the cumulative electricity consumption of the current week (3,298,104.00 kWh) and the decrease compared with the previous week (-94%). It is associated with electricity fee data to assist in weekly electricity cost control.
Today’s Usage: Presents the cumulative electricity consumption of the day (1,366,092.00 kWh) and the decrease compared with the average of the past 30 days (-31%). It focuses on daily electricity performance and identifies daily electricity abnormalities.

2. Filter Query Area

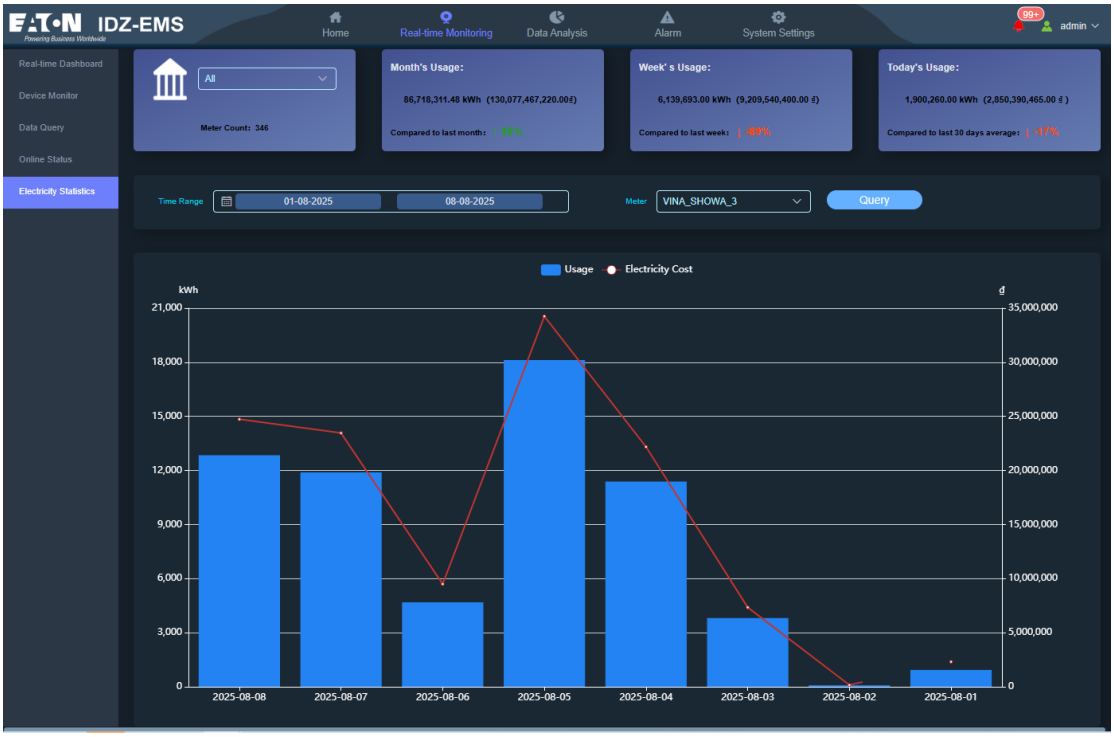
Time Range: Set the query period through the date picker (e.g., 01-08-2025 to 09-08-2025), flexibly define the analysis time period to meet the needs of short-term (single day/week) and long-term (monthly/annual) electricity consumption analysis.
Meter Selection: Select a specific electric meter from the drop-down list (e.g., "VISION_1"), supporting the focus on electricity consumption data of a single device, which is convenient for in-depth analysis of energy efficiency of key devices.
Query Trigger: Click the button to load the corresponding electricity consumption data according to the filtering conditions (time, meter) and update the content of the visual charts below.

3. Visualization Chart Area

In the form of a combination of bar charts and line charts, it displays the following within the

selected period:
Electricity Usage (blue bars): Reflects daily changes in electricity load, identifying peak periods (e.g., significantly high electricity usage on 2025-08-05) and off-peak periods.
Electricity Cost (red line): Linked to electricity fee data, it presents fluctuations in electricity costs, helping analyze questions such as "whether high electricity usage is accompanied by high costs" and "whether abnormal costs are caused by electricity prices or equipment energy efficiency".

Operation Method



1. Overview data Viewing

Directly browse the top overview area to quickly obtain the total monthly, weekly, and daily electricity consumption, their month-on-month changes, and corresponding electricity fees, so as to grasp the overall electricity consumption trend.

2. Filtering and Querying

Time/Meter Filtering: Click the time picker to set the start and end dates (for example, to analyze data from the past 7 days, adjust it to 02-08-2025 to 09-08-2025); click the meter drop-down box to select the target meter (such as switching to "NITTO_DEMO").
Execute Query: Click the "Query" button, and the chart area will load and display the daily electricity consumption + cost curve under the filtering conditions.

3.3 Data Analysis

1. Access Path

After logging into the system, click the "Data Analysis" option in the navigation bar to enter Data Analysis. In the sidebar of the Data Analysis page, you can select different sub-functions to operate, and the default sub-menu entered is Branch Energy Use.

3.3.1 Data Analysis

Function Positioning

Focusing on the electricity consumption statistics and comparative analysis of multi-branch power equipment, it supports filtering by time range and branch, and presents the daily electricity consumption data of each electric meter (Meter Name) within the selected period. It facilitates scenarios such as energy efficiency management, electricity cost allocation, and branch electricity consumption assessment, providing data support for the optimal allocation of power resources and the formulation of energy-saving strategies.

Function Details

1. Left Branch Filter Area

List power branches in a tree structure (e.g., "C4 - F1", "S/S B1 - 2"), supporting the selection of single or multiple branches to limit the statistical scope; a keyword search box ("Filter by entering keywords") is provided to quickly locate target branches. In complex power networks, it enables flexible filtering of concerned branches/regions, avoiding interference from irrelevant data and improving analysis efficiency (e.g., only viewing the electricity consumption of branches "C4 - F1" and "S/S B1 - 2").

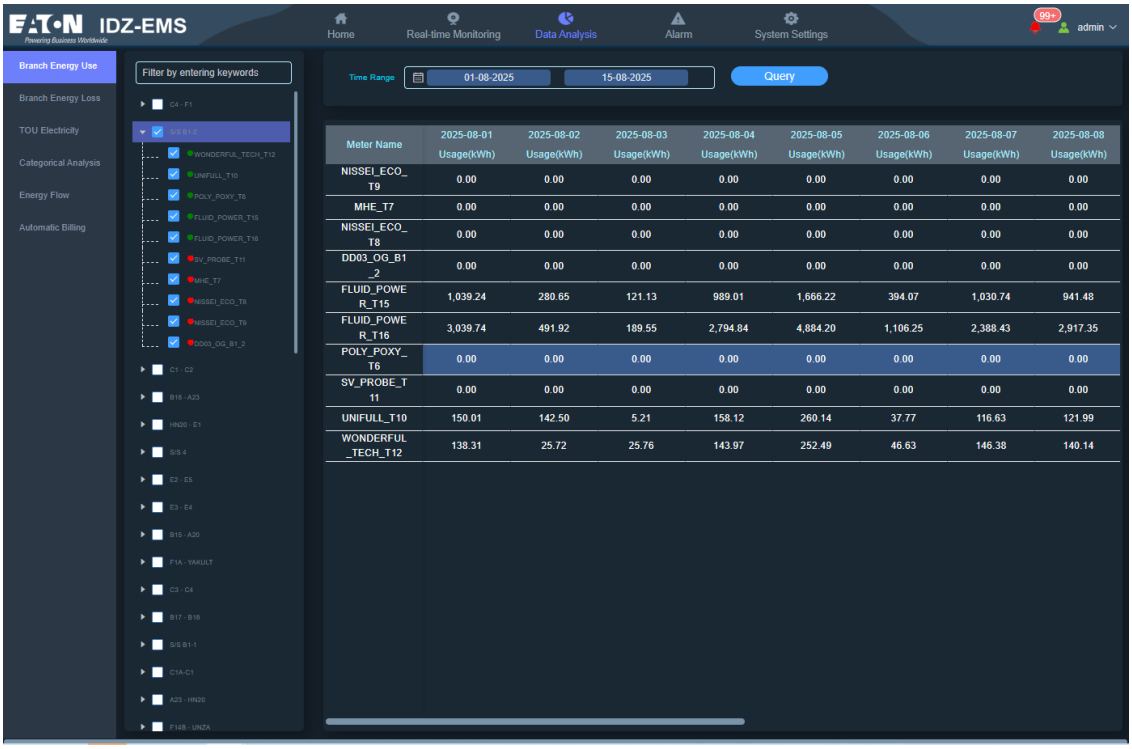
2. Top Time Filter Area

Set the statistical period through the time picker (e.g., "31 - 07 - 2025" to "08 - 08 - 2025"), and click "Query" to load the electricity consumption data for the corresponding period. It meets the needs of analysis at different time granularities (such as monthly and weekly comparisons) and helps identify electricity consumption trends (such as the summer electricity peak of a certain branch).

3. Right Data Statistics Area

A two-dimensional table presents the "daily electricity consumption (Usage (kWh))" of "Meter Name" within the selected period, covering daily data from the start date to the end date. It enables horizontal comparison of daily electricity consumption differences among different branches/meters (e.g., "AEOCO_PACK" has relatively stable electricity consumption on each day, while "HONDA_2" has large fluctuations in electricity consumption); and vertical analysis of the electricity consumption trend of a single branch/meter (e.g., the electricity consumption of "C4 - F1" increases from 0 in the later period), so as to identify electricity consumption abnormalities (e.g., long-term zero electricity consumption may indicate that the equipment is offline).

Operation Method



Branch Filtering and Querying

Filtering branches: Directly check the target branches in the left branch tree (e.g., "C4 - F1", "S/S B1 - 2"); or enter branch name keywords in the search box (e.g., "C4") to quickly locate and check them.
Setting time: Click the time picker to adjust the start and end dates (e.g., to analyze data from the last week of July to the first week of August).
Executing query: Click the "Query" button, and the right table will load the electricity consumption data of the filtered branches within the selected time range.

3.3.2 Branch Energy Loss

Function Positioning

It focuses on the monitoring and analysis of electrical energy loss in branch circuits of power systems. By counting the electricity consumption, loss amount, loss rate, and suspected electricity theft risks of branch circuits, it helps operation and maintenance personnel identify links of electrical energy waste, investigate and eliminate hidden dangers of electricity theft, ensures the efficient and economical operation of power systems, and provides data support for electrical energy loss management and energy-saving optimization.

Function Details

1. Left Branch Filter Area

It lists power branch circuits in a tree structure (such as "C4 - F1", "SS B1 - 2", "HN20 - E1", etc.), clearly presenting the hierarchy and attribution of branch circuits, covering multi-branch monitoring scenarios of power systems.
Search and Filter: A "Filter by entering keywords" search box is provided, supporting quick

filtering and searching for specific branches through keywords such as branch circuit names and numbers. This improves the efficiency of branch positioning, especially suitable for large-scale power branch management scenarios.

2. Top Time and Query Area

Time Range: Supports setting the statistical period for power loss data (e.g., "29-07-2025" to "31-07-2025"), accurately defining the analysis time period. It meets the needs of power loss monitoring in different cycles (single day, multiple days) and facilitates comparing loss differences in different time periods.

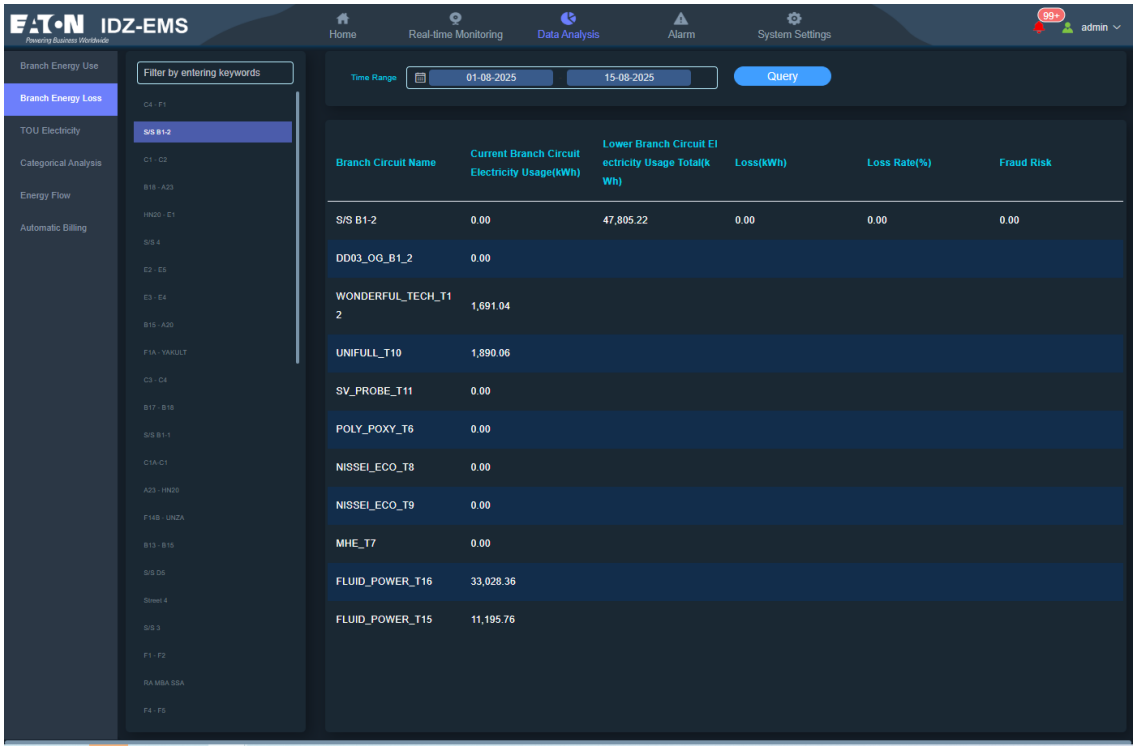
3.Query

After clicking, it retrieves and loads the power loss data of the corresponding branch circuit from the system database based on the branch selected on the left and the set time range, and refreshes the content in the data display area on the right. It is the core operation to trigger data query.

4. Right-side Data Display Area

It presents the power loss-related data of the filtered branch circuits in the form of a table, including:
Basic information: "Branch Circuit Name", which clearly indicates the branch circuit to which the data belongs.
Power loss parameters:
"Current Branch Circuit Electricity Usage (kWh)": Counts the electricity consumption of the corresponding branch circuit itself within the selected period, reflecting the load condition of the branch circuit.
"Lower Branch Circuit Electricity Usage Total (kWh)": Summarizes the total electricity consumption of all lower-level branches under this branch circuit, serving as the basic data for calculating power loss.
"Loss (kWh)": Presents the power loss value of the branch circuit through the difference between the current branch's electricity usage and the total electricity usage of its lower-level branches (theoretical calculation; in an ideal state, it is 0 when other losses such as line loss are ignored). An abnormally large loss may indicate problems such as line faults or electricity theft.
"Loss Rate (%)": Displays the proportion of power loss in percentage (loss amount / current branch's electricity usage × 100%), intuitively reflecting the energy utilization efficiency of the branch circuit. The higher the loss rate, the more serious the energy waste.
"Fraud Risk": The suspected electricity theft risk level intelligently evaluated by the system based on data such as loss amount and loss rate (in numerical form, where 0 represents low risk and the higher the value, the higher the risk), assisting in investigating potential electricity theft hazards.

Operation Method



1. Branch and Time Filtering

Click on the branch tree node on the left and check the target branch circuit (e.g., "HN20 - E1"); click the "Time Range" date picker to set the start and end dates respectively (e.g., to analyze the power loss from July 29 to July 31).
Execute query: Click the "Query" button, and the system will load and display the power loss data of the branch circuits that meet the conditions, with the corresponding results presented in the data display area.

2. Data Viewing and Analysis

Data Browsing: Directly view the power loss-related data of each branch circuit in the table to quickly identify branches with abnormal loss amounts or loss rates (e.g., a branch with a loss rate much higher than others). For branch circuits with abnormal loss amounts or loss rates, combine the "Fraud Risk" data to determine whether there are potential electricity theft hazards. If the loss rate is high and the fraud risk value is large, further on-site inspections can be carried out to investigate problems such as line faults and electricity theft....

3. Filtering and Switching Operations

Branch switching: In the left branch filtering area, check different branch circuits and click the "Query" button to switch to view the power loss data of other branches and compare the loss status of multiple branches.
Time range adjustment: Reset the date in "Time Range" and click the "Query" button to view the power loss data of different statistical periods and analyze the time variation trend of power loss.

3.3.3 TOU Electricity

Function Positioning

Focusing on branch electricity consumption analysis under the Time-of-Use (TOU) tariff scenario, it calculates the electricity consumption and cost of branch circuits according to Peak, Normal, and Off-Peak periods. This helps users optimize electricity usage behaviors, control electricity costs, and adapt to the needs of energy efficiency management under the TOU tariff policy.

Function Details

1. Left Branch Filter Area

Power branches are listed in a tree structure (e.g., "C4 - F1", "SIEMENS"), supporting the selection of single or multiple branches to limit the statistical scope; a keyword search box is provided to quickly locate target branches.
Value: Flexibly filter the concerned branches/regions, avoid interference from irrelevant data, and improve analysis efficiency (e.g., only view the time-of-use electricity consumption of "SIEMENS" and "PIONA_3").

2. Top Time and Query Area

Set the statistical time range (e.g., "18 - 08 - 2025 00:00:00" to "19 - 08 - 2025 00:00:00") and click "Query" to load the corresponding electricity consumption data.
Value: It meets the needs of analysis at different time granularities (such as single-day and multi-day) and enables comparison of differences in time-of-use electricity consumption across different periods (e.g., peak and off-peak electricity consumption on weekdays vs. weekends).

3. Right Data Statistics Area

In tabular form, by Peak/Flat/Off-Peak/Total dimensions, the selected branches are displayed as follows:
Electricity consumption (Usage (kWh)): Reflects the electricity load in each period and identifies the distribution of electricity consumption during peak and off-peak periods (e.g., the peak-period electricity consumption of "SIEMENS" is 1,610.17 kWh).
Electricity cost (Cost (₫)): Associated with time-of-use tariffs, it presents the electricity cost in each period (e.g., the peak-period cost of "SIEMENS" is 4,091,441.97 ₫), helping to analyze "whether high-cost periods correspond to high energy consumption".

Operation Method

Branch filtering: Directly check the target branches in the left branch tree (e.g., "SIEMENS", "PIONA_3"); or enter keywords of branch names in the search box (e.g., "SIEMENS") to quickly locate and check them.
Time setting: Click the time picker to adjust the start and end dates (e.g., to analyze the time-of-use electricity consumption for a single day, set it as "18 - 08" to "19 - 08").
Execute query: Click the "Query" button, and the right table will load the time-of-use electricity consumption data of the filtered branches within the selected time range.

3.3.4 Categorical Analysis

Function Positioning

Focusing on multi-dimensional classification statistics, comparison, and trend analysis of power data, it provides electricity consumption analysis by different dimensions (such as VSIP, Load Profile, Department) and time granularities (Day/Month/Year). It helps users gain insights into electricity consumption patterns from macro to micro levels, identify abnormal branches, and optimize power distribution, adapting to scenarios such as energy efficiency management, cost control, and fault troubleshooting.

Function Details

1. VSIP/Department dimension (taking pie chart + multi-chart combination as an example)

Classified by VSIP/department, it displays the proportion of electricity consumption by category (pie chart), top 5 in electricity consumption growth (bar chart), top 5 in electricity consumption (bar chart), comparison of electricity consumption in the same period (line chart), and time-of-use electricity consumption trend (stacked bar chart), presenting the characteristics of classified electricity consumption from different perspectives.

2. Load Profile dimension (taking curve + parameter filtering as an example)

Focusing on a single branch/device, it displays electrical parameter curves (such as current phases A, B, and C), supports filtering of parameter types (I/U/PF, etc.), and presents the fluctuation of parameters over time.

3.Compare dimension (taking the comparison of multi-date curves as an example)

It supports the comparison of electricity consumption data across multiple dates (up to 4 dates), displaying parameter curves such as electricity quantity/power, so as to intuitively present the differences in electricity consumption between different dates.

4. Compare_sum_Use dimension (taking the statistics of electrical energy in time periods as an example)

According to the selected branch, count the active/reactive electric energy in the specified time periods (up to 5), and present the total electricity consumption in the time periods.

5. Left branch filtering + keyword search

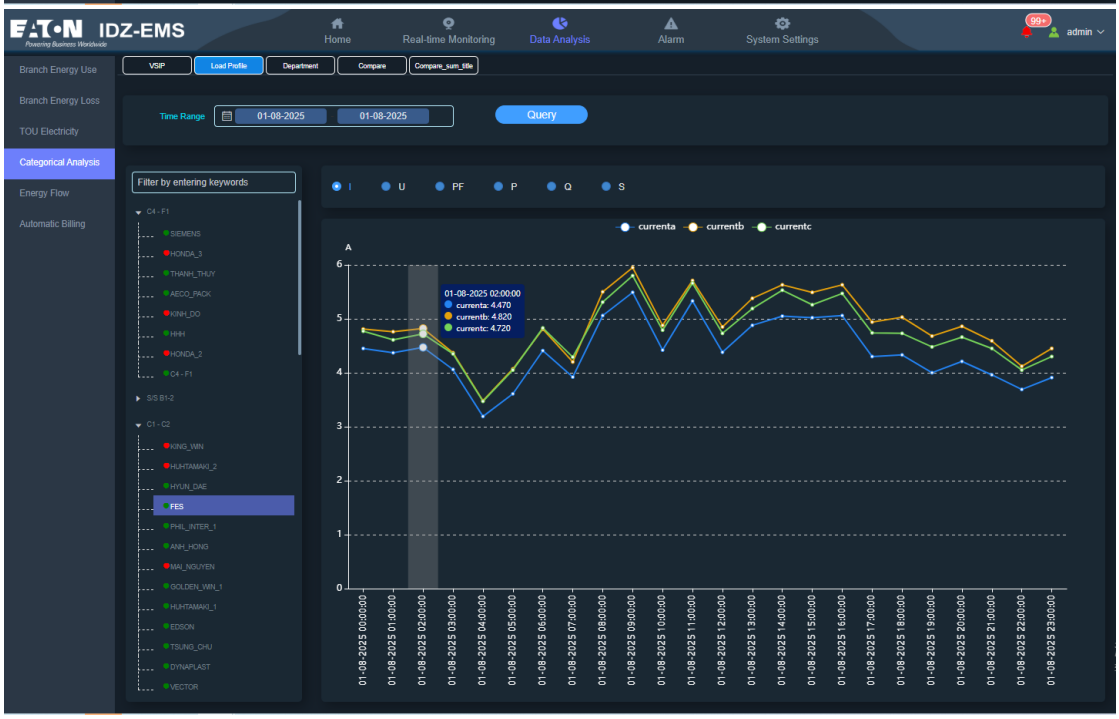
The power branches are listed in a tree structure, supporting the selection of single or multiple branches; the search box supports quick keyword positioning to flexibly limit the analysis objects.
In multi-category/multi-branch scenarios, it can accurately focus on target objects (such as only analyzing the power consumption of the "SIEMENS" branch) to avoid interference from irrelevant data.

6. Time filtering + Query triggering

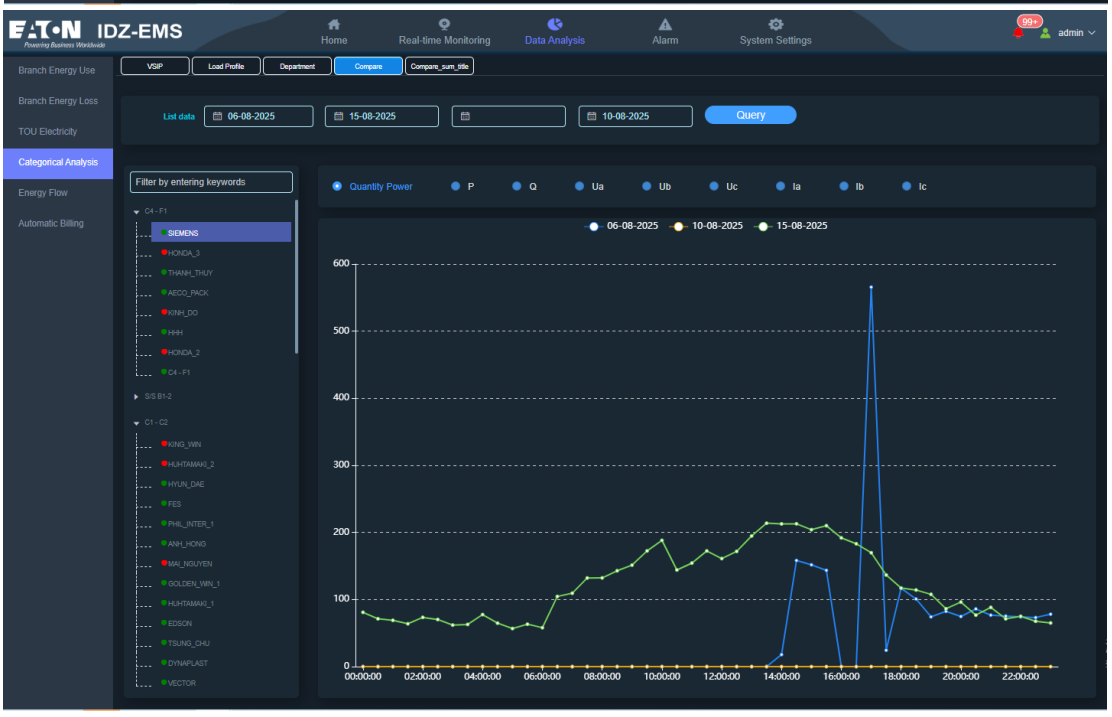
Set the time range (Time Unit supports Day/Month/Year), click "Query" to load the electricity consumption data corresponding to the time + category/branch, and drive the chart to update.

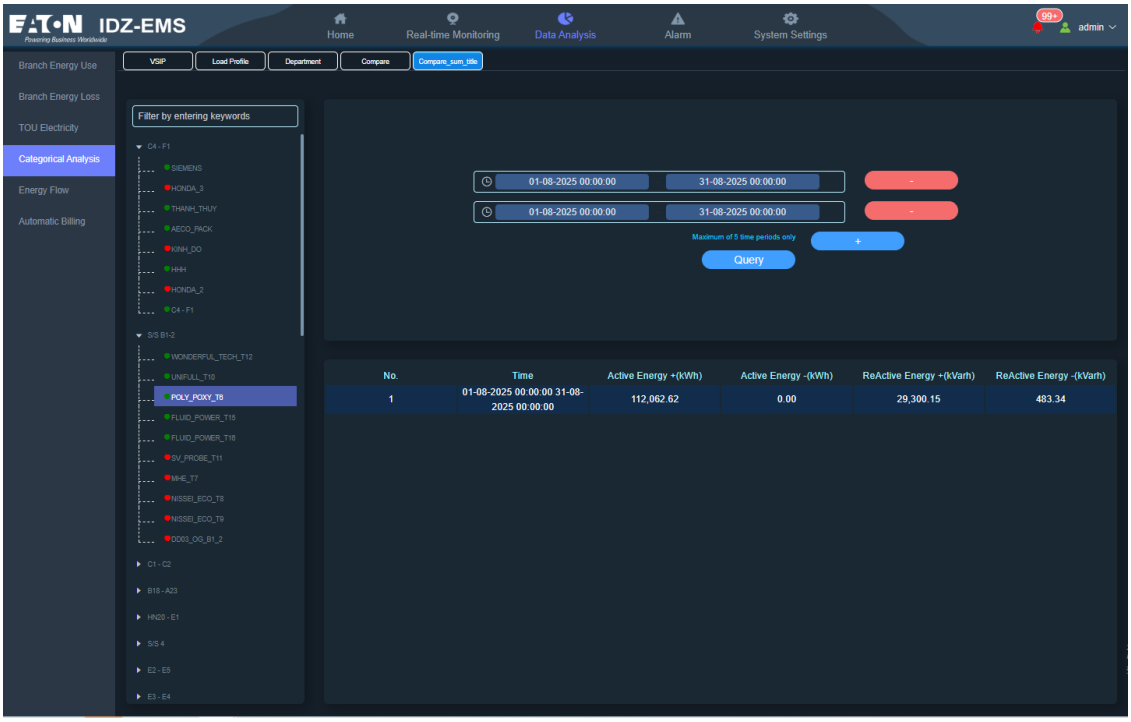
Operation Method

EATON
Powering Business Worldwide



Powering Business Worldwide





Select analysis dimension: Click the top Tab (such as "VSIP") to switch the analysis perspective.
Filter branches/categories: Check the target branch (such as "SIEMENS") on the left, or use keywords to search and locate.
Set time: Select the Time Unit (such as "Day") and set the Time Range (such as a single day "01 - 08 - 2025").
Execute query: Click "Query" to load and display the classified electricity consumption data (pie charts/bar charts, etc. will be updated).
Special operations (Load Profile/Compare, etc.)

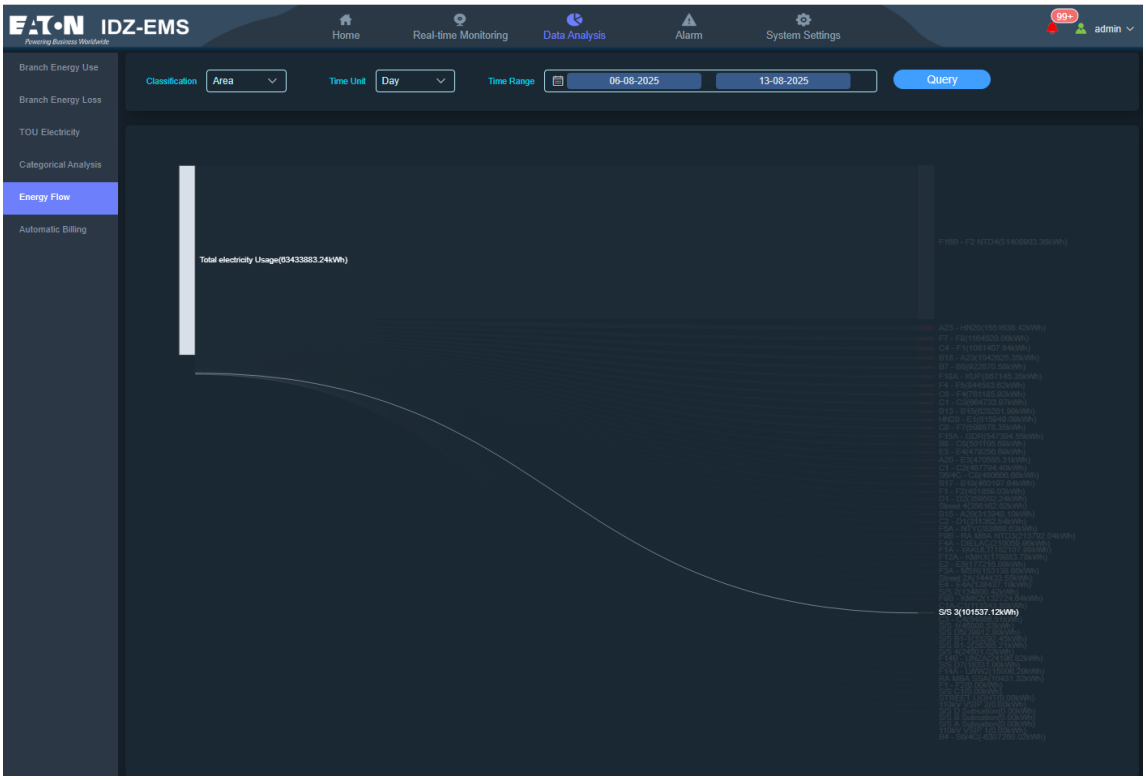
1. Load Profile Parameter Analysis

Check the target branch on the left → select "Load Profile" at the top → filter parameters (e.g., only view "PF (Power Factor)") → set the time → click "Query". Observe the curve fluctuations to identify abnormalities (for example, if the power factor is continuously lower than 0.9, reactive power compensation may be required).

2. Compare Multi-date Comparison

Select "Compare" at the top → check the branch on the left → set 4 comparison dates (e.g., 30-07/26-08/10-08/03-08) → click "Query". Analyze the curve differences (for example, if there are many spikes in the curve on a certain date, check whether there is a temporary high load).

3.3.5 Energy Flow



3. Function Positioning

Centering on multi-dimensional classification statistics, comparison, and trend analysis of power data, it provides electricity consumption analysis based on different dimensions (such as VSIP, Load Profile, Department) and time granularities (Day/Month/Year). It helps users gain insights into electricity consumption patterns from macro to micro levels, identify abnormal branches, and optimize power distribution, adapting to scenarios such as energy efficiency management, cost control, and fault troubleshooting.

Function Details

4.1. Filter Criteria Area

Select the classification basis from the drop-down menu (such as "Area"), define the classification logic for energy flow analysis, and adapt to different management dimensions (such as counting energy flow by area or functional zone).
Time Unit: Set the time granularity for analysis (such as "Day"), determine the cycle of data statistics, and meet the needs of short-term (single day) and long-term (month/year) energy flow analysis.
Time Range: Select the specific analysis period (such as 06-08-2025 to 13-08-2025), limit the time interval for data statistics, and ensure the pertinence of the analysis data.
Query: Click to trigger data query, extract energy flow data from the system database according to the filtering conditions (classification, time unit, time range), and drive the dynamic generation of the Sankey diagram.

2. Sankey Diagram Visualization Area

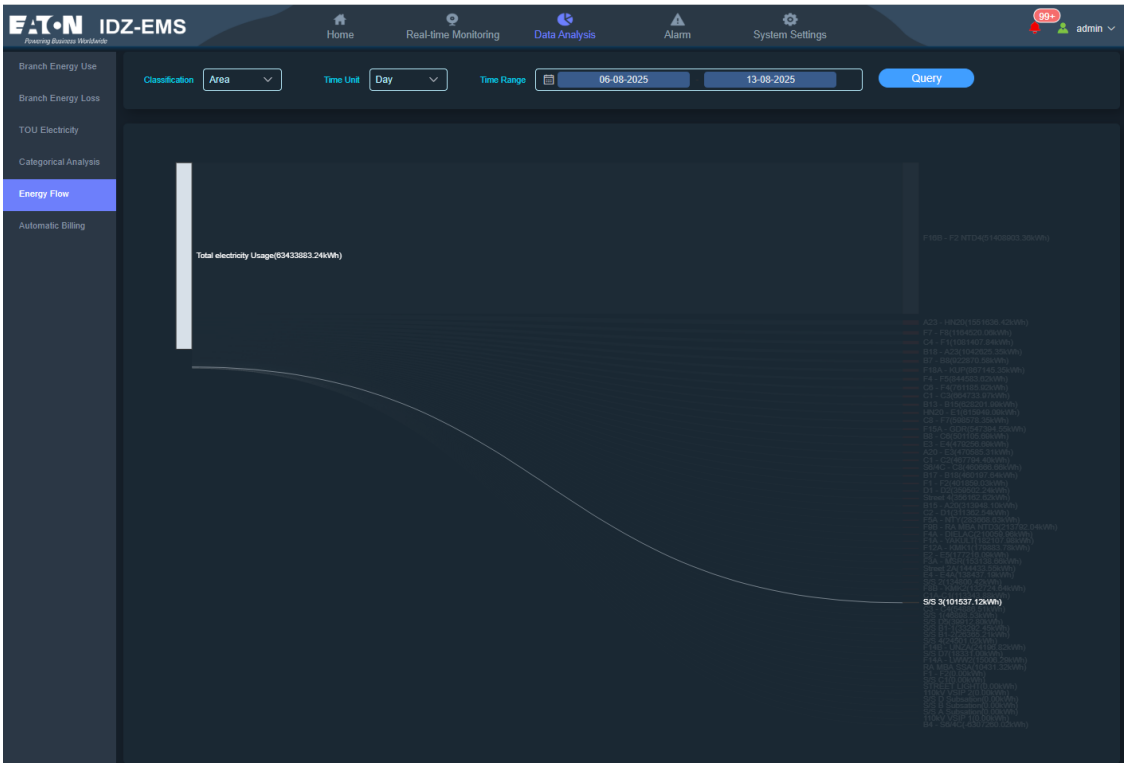
2.1 Energy Flow Display

The electricity flow is presented in a hierarchical Sankey diagram. The starting node on the left represents the total electricity consumption (e.g., "Total electricity Usage (6433883.264kWh)"), and the branch nodes on the right correspond to various power branches (e.g., "F18B - F2 NTD4 (4380800.286kWh)", "A23 - JWRD (1654358.426kWh)", etc.). The width of the flow lines corresponds to the amount of electricity flow, intuitively reflecting the proportion of electricity distribution and transmission paths of each branch.

2.2 Data Annotation

Nodes are labeled with electrical energy values (such as total electricity consumption and electricity consumption of each branch), which assist in quantitative analysis of energy flow magnitude and enable quick identification of high-energy-consuming branches (for example, a branch with a wide flow line and a large electricity consumption value is a high-energy-consuming point).

Operation Method



1. Set filter Conditions

Click the "Classification" drop-down box and select the classification dimension (e.g., "Area");
Adjust the "Time Unit" to the target time granularity (e.g., select "Day" for analyzing daily energy flow);
Set the analysis period through the "Time Range" date picker (e.g., 06 - 08 to 13 - 08).
Execute the query: Click the "Query" button, and the system will load the energy flow data corresponding to the conditions. The Sankey diagram will be dynamically updated to show the flow distribution of electrical energy within the selected classification and time period.

2. Adjustment and Reuse of Filter Conditions

Condition adjustment: If you need to analyze energy flow with different classification dimensions (e.g., switching from "Area" to "Department") or time cycles (e.g., changing from a single day to a month), reset "Classification", "Time Unit", and "Time Range", then click "Query" to switch the analysis perspective.

3.3.6 Automatic Billing

Function Positioning

Focusing on automated billing and bill management for electricity usage, it integrates electricity consumption data during peak/flat/valley periods and demand-side data to generate electricity bills. It supports bill inquiry, invoice export, and detailed list export, adapting to scenarios such as cost settlement and financial auditing in power operations, and helping enterprises accurately calculate electricity costs and standardize electricity fee management processes.

Function Details

1. Filter and Operation Area

1.1 Creation Time

Filter the billing month (e.g., "08-2025") to limit the billing cycle for the query.

1.2 Select Company

Select the electricity-consuming entity from the drop-down menu (e.g., "AJE_VIET_NAM") to focus on the billing data of specific customers/branches.

1.3 Query

Trigger the bill query, and load the electricity bill data of the corresponding period and subject according to the conditions of "Creation Time + Select Company"

1.4 Export Invoice

Export the query results as a file to meet the needs of financial invoicing and customer reconciliation.

1.5 Export Detail

Export the detailed electricity consumption data (including peak/flat/valley readings, usage, and costs) for in-depth auditing (such as verifying the accuracy of electricity deductions during peak hours).

1.6 Bill Data Area

Present the electricity billing details of a single entity (e.g., AJE_VIET_NAM) in a table:

Time period readings and usage:

Peak：Old Peak Reading、New Peak Reading、Peak Usage；

Normal：corresponding to Old/Normal Reading、Normal Usage；

Off-Peak：corresponding to Old/Off-Peak Reading、Off-Peak Usage；

Costs and demand-side data：

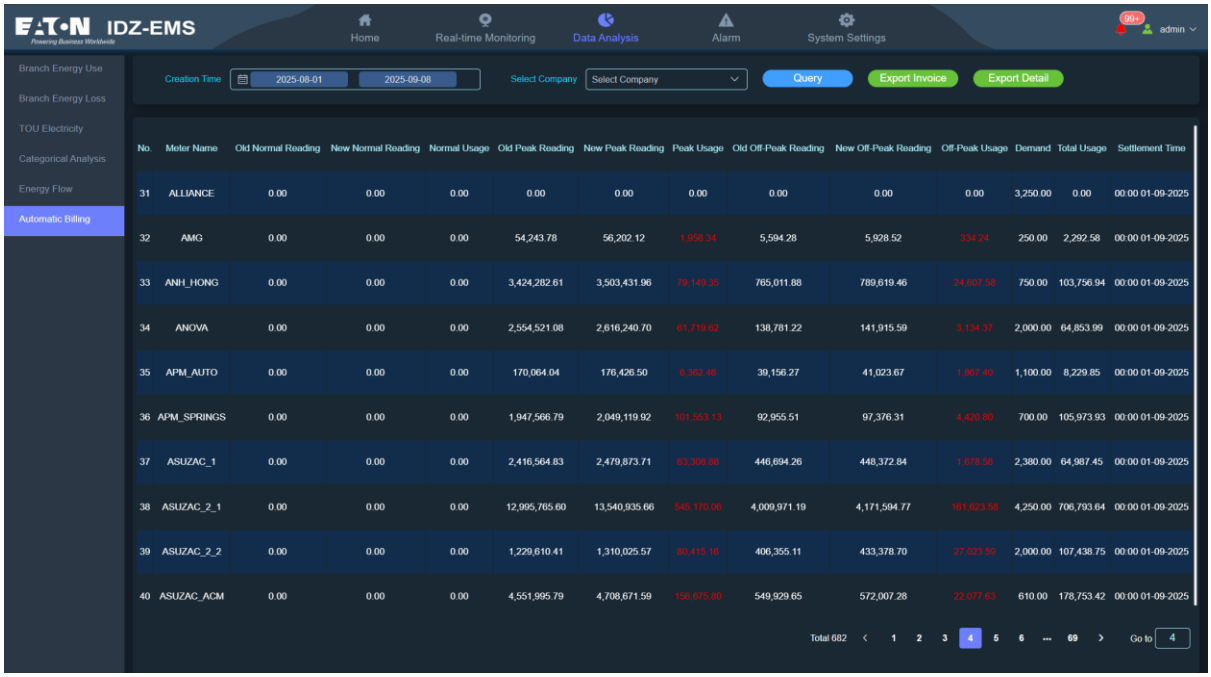
Demand：Reflects Demand, which affects basic electricity charges under some billing models；

Total Usage： Total usage during peak + flat + valley periods；

Total Fee：Total electricity fee calculated based on time-period usage and demand capacity；

Settlement Time：Bill confirmation / settlement time.

Operation Method:



1. Bill Inquiry Process

Use “Creation Time” as the time range for querying settlement entries;
Select "Select Company" as the target electricity-consuming entity (e.g., "AJE_VIET_NAM").
Execute the query: Click "Query" to load the electricity bill data that meets the corresponding conditions. The table will be automatically populated with information such as peak/flat/valley readings, usage, and costs.

2. Bill Export Operation

Export Invoice: Click this button to export a formatted invoice file (including key information such as total cost and settlement time), which can be directly used for financial reimbursement / customer notification.
Export Detail: Click to export the detailed data file (including readings, usage, and demand-side data for each time period) for:
Financial auditing (verifying the corresponding relationship between time-period usage and

costs);
Energy efficiency analysis (optimizing peak-valley electricity consumption strategies based on detailed data)

3. Data Verification and Analysis

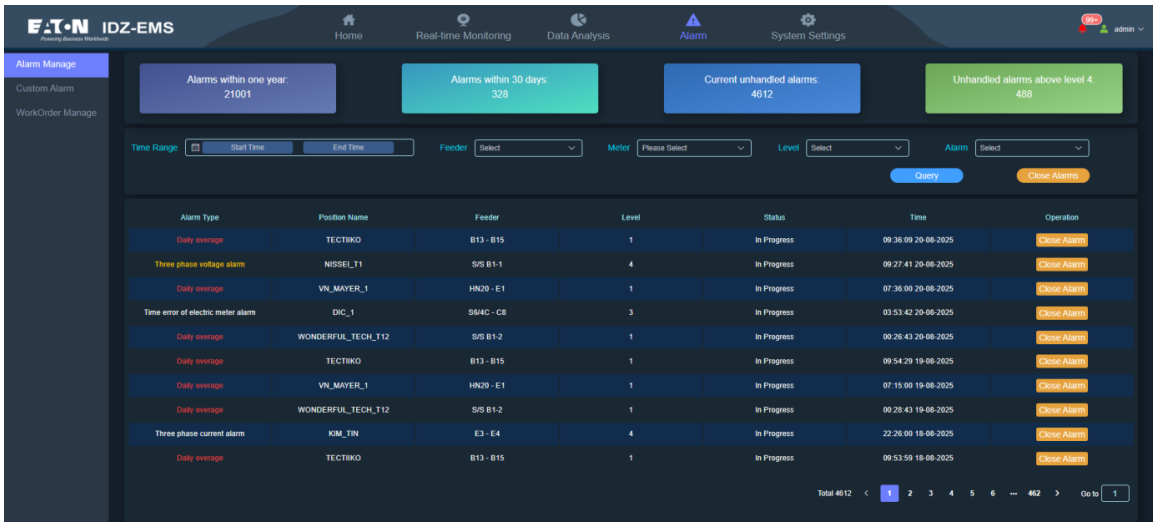
Verification of time-period usage: Calculate the usage by "New - Old Reading" (e.g., 200,588.55 - 196,478.15 = 4,110.40 kWh for the peak period), and check whether it is consistent with "Peak Usage" to verify the accuracy of the billing logic.
Analysis of cost rationality: Compare the Total Fee with the sum of costs in each time period (peak + flat + valley costs), and combine with Demand (demand capacity) to determine whether the electricity fee calculation complies with the contract / electricity price policy (e.g., if the peak period electricity price is high and the usage is large, the peak period cost should account for a high proportion).

3.4 Alarm Management

1. Access Path

After logging into the system, click the "Alarm" option in the navigation bar to enter the Alarm section. In the sidebar of the Alarm page, you can select different sub-functions to operate, and the default sub-menu entered is Alarm Manage.

3.4.1 Alarm Management



Function Positioning

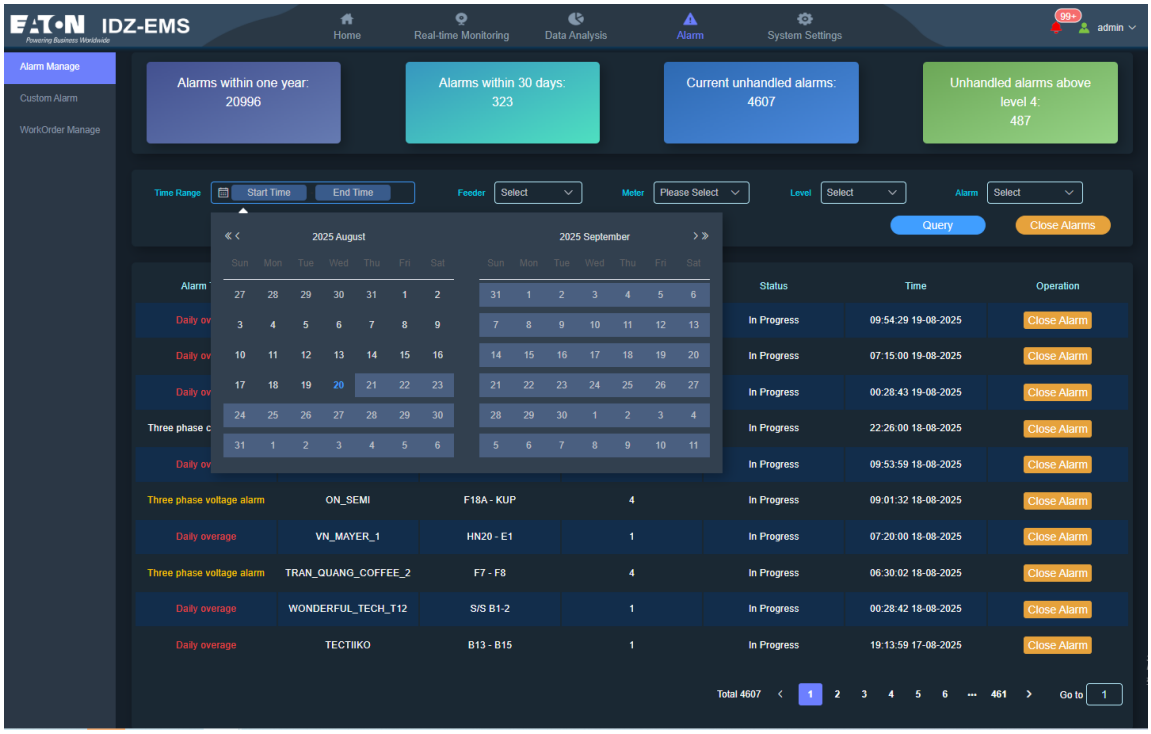
This is an alarm management system interface, mainly used for centralized monitoring, screening and handling of equipment alarms in power (or similar industrial scenarios). It helps operation and maintenance personnel quickly grasp equipment abnormalities, respond to and handle faults in a timely manner, and ensure the stable operation of the system

Function Details

The top section displays statistics including "number of alarms in one year (21001), number

of alarms in 30 days (328), number of currently unhandled alarms (4612), and number of unhandled alarms at level 4 or above (488)", which quickly present the scale and urgency of alarms.
The table shows alarm details, including "alarm type (such as Daily overage, three-phase voltage alarm), location name, affiliated Feeder, alarm Level (Level 1 - 4), status (In Progress indicates unhandled), alarm time, and operation items", clearly sorting out abnormal information.
It supports filtering by "time range, feeder, electricity meter, level, and alarm type" to accurately locate specific alarms (for example, only viewing voltage alarms of a certain feeder and at level 4 or above).

Operation Method



1. Query Alarm

Select filtering criteria such as time, feeder, and electricity meter, then click "Query" to load the alarm data that meets the criteria into the table.

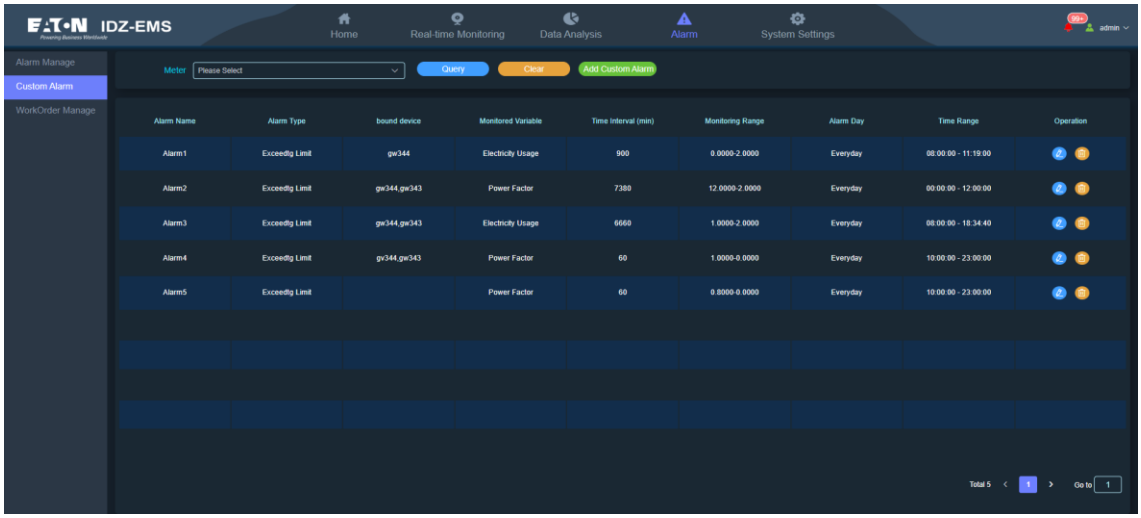
2. Close the Alarm

For alarms that have been handled, click "Close Alarm" in the corresponding row to mark the alarm as resolved (for batch closing, check the boxes and click "Close Alarms").

3. Pagination Browsing

The page numbers "1, 2 ..." at the bottom allow you to click to switch and view more alarm records, so as to know all the unhandled information.

3.4.2 Custom Alarm



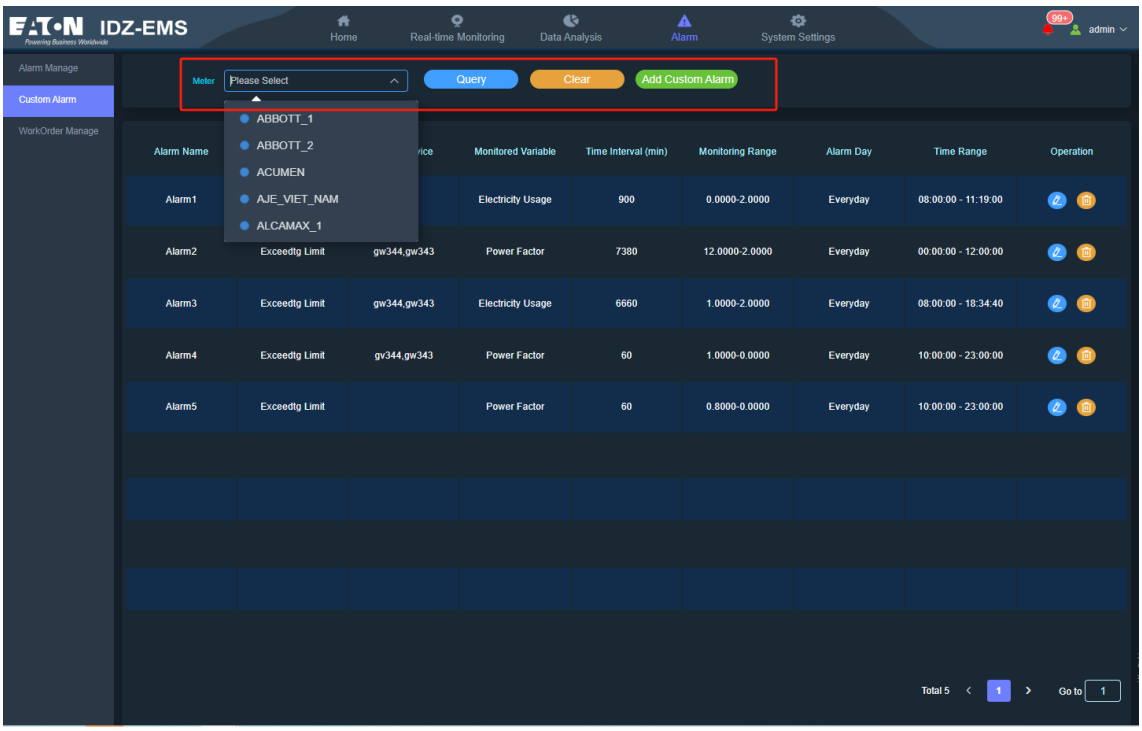
Function Positioning

This is the custom alarm configuration page of IDZ-EMS (Energy Management System), which is used to set personalized alarm rules for power equipment (such as electric meters, sensors). When equipment data (power consumption, power factor, etc.) exceeds the preset range, alarms will be automatically triggered, helping operation and maintenance personnel prevent and control faults in advance and ensuring the stability of the energy system.

Function Details

It supports setting exclusive alarm conditions for different equipment and different variables (such as power consumption, power factor). For example, "Alarm when the power consumption of equipment gw344 exceeds 2.0000 between 8:00 and 11:00 every day".

Operation Method



1. Query Existing Rules

Select the Meter (electric meter/device), click Query to filter the custom alarm rules associated with the device;
Click Clear to clear the filtering criteria and resume displaying all rules.

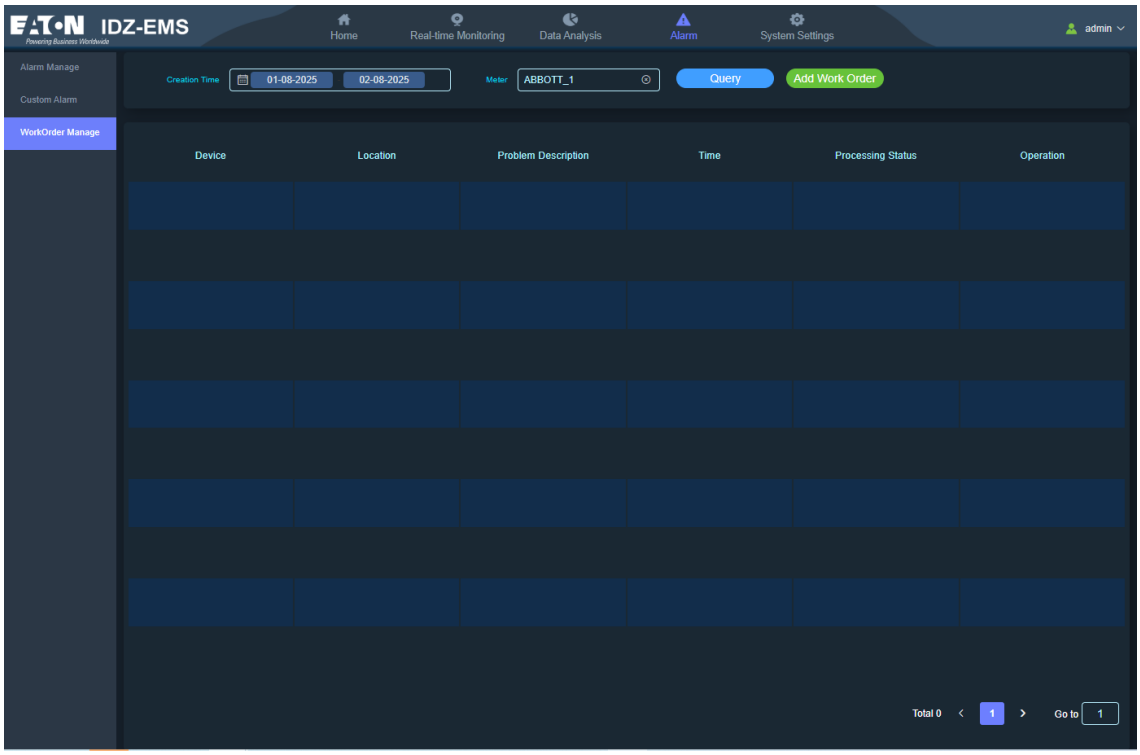
2.Add a Custom Alarm

Click "Add Custom Alarm" to bring up the configuration window (you need to fill in "alarm name, associated device, monitoring variable, threshold, time interval, effective time period", etc.);
Example: Configure for device gw345 an alarm that "triggers when the power factor exceeds 0.9 - 1.1 from 14:00 to 18:00 every day". After filling in the fields and saving, the new rule will take effect.

3. Edit / Delete Rules

Click the edit icon (blue pencil) in the operation column to modify the threshold, time period, etc. of existing rules;
Click the delete icon (orange trash can) to remove alarm rules that are no longer needed.

3.4.3 WorkOrder Management



Function Positioning

This is the work order management page of IDZ - EMS, which is mainly used for centralized management of operation and maintenance work orders related to equipment, covering operations such as work order creation, query, and status tracking. It helps the operation and maintenance team handle equipment issues in an orderly manner and ensures the normal operation of equipment in the energy system.

Function Details

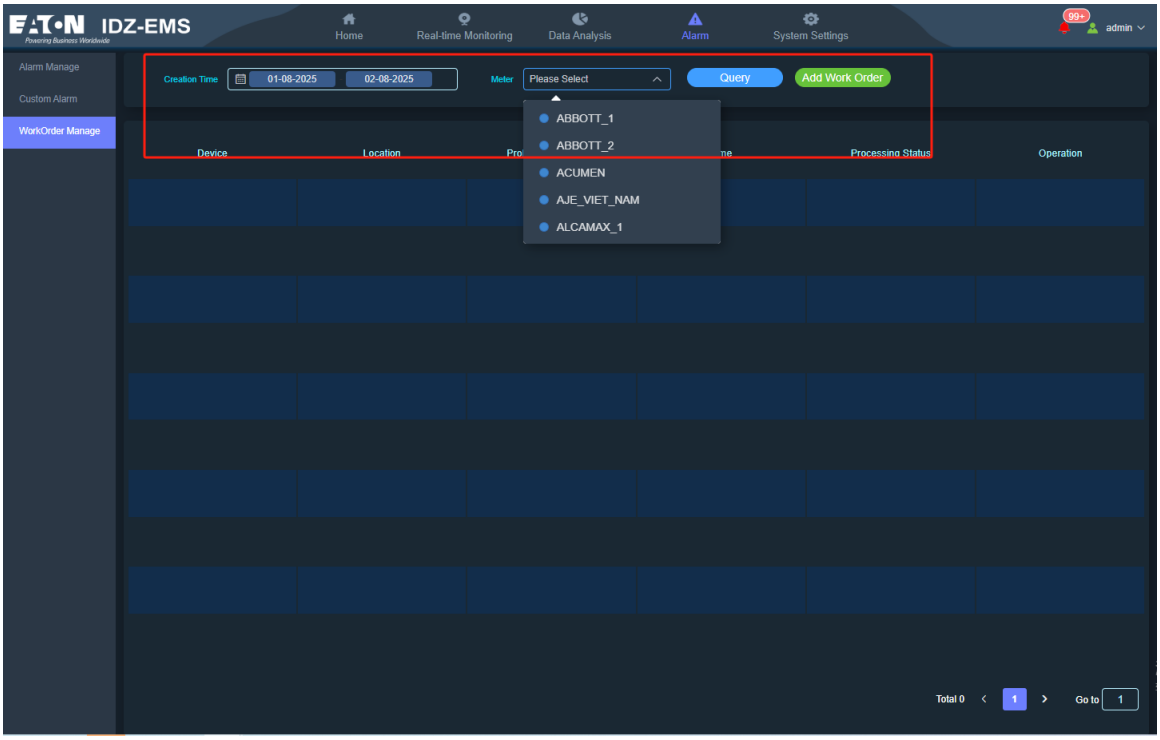
Work orders can be filtered by Creation Time (e.g., 01-08-2025 to 02-08-2025) and Meter (electric meter/device, e.g., ABBOTT_1) to quickly locate work orders related to a specific time range or specific device.
Click the Query button to perform the query operation and obtain a list of work orders that meet the filtering criteria.
Work order creation: The Add Work Order button is used to create new operation and maintenance work orders. Information such as equipment faults and maintenance requirements can be entered to initiate the operation and maintenance process.
The table lists key information of work orders, including Device, Location, Problem Description (recording equipment faults, etc.), Time (work order-related times such as creation time, fault occurrence time, etc.), Processing Status (such as pending, in process, completed, etc.), and Operation (subsequent operations such as editing the work order and marking its status).
Pagination function: The pagination controls at the bottom (Total 0 indicates no work orders meet the criteria currently, page number 1, jump buttons, etc.) are used to browse work order content across multiple pages.

Operation Method

1. Query Work Orders

Select the time range for Creation Time, select a device (such as ABBOTT_1) from the Meter drop-down box, and click the Query button. The table on the page will load the work order information that matches the corresponding criteria. Create a work order: Click the Add Work Order button, enter details such as equipment fault information and location in the pop-up creation interface (system support is required; not shown in the figure), and a new work order will be generated after submission.

2. Operate Work Orders



In the Operation column of the work order list, click the corresponding operation buttons (if any, such as the edit button to modify work order information, the status change button to update the processing status, etc.) to perform subsequent management operations on the work order.

When there are a large number of work orders, click the page numbers at the bottom (e.g., switch from page 1 to other pages) or enter a page number in the "Go to" field to jump, so as to view work orders on different pages.

3.5 System Settings

1. Access Path

After logging into the system, click the "System Settings" option in the navigation bar to enter the System Settings page. In the sidebar of the System Settings page, you can select different sub-functions to operate, and the default sub-menu to enter is Company Information.

3.5.1 Company Information

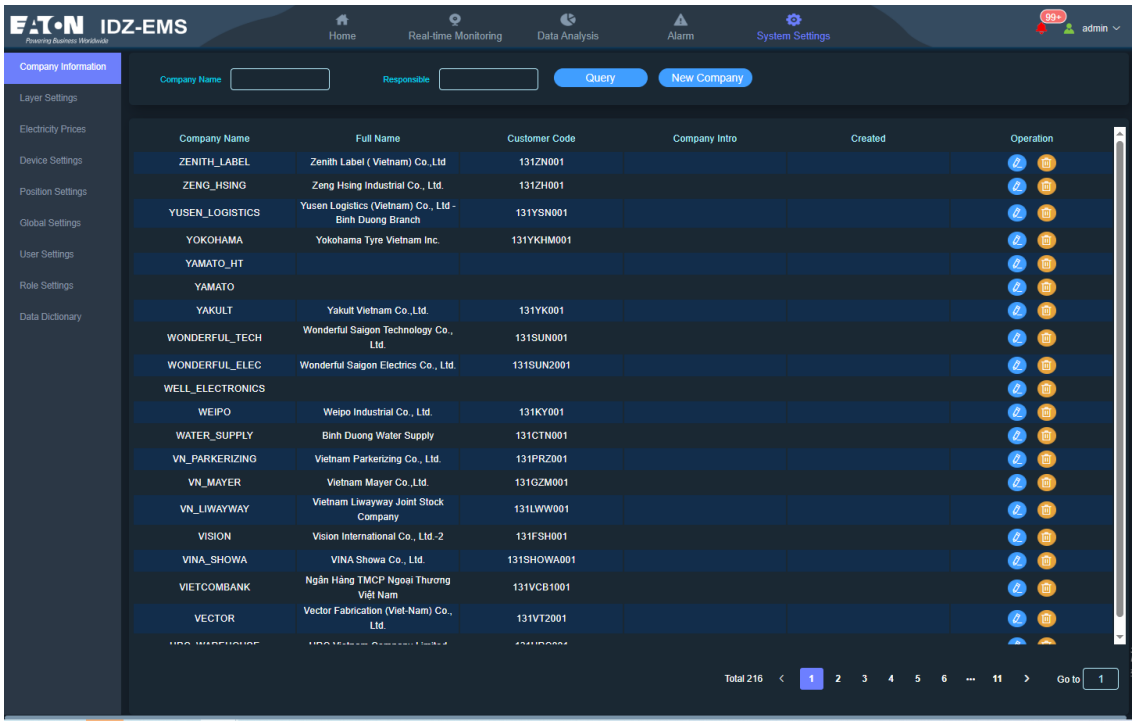
Function Positioning

This is the enterprise information management page of IDZ-EMS, which is used for centralized maintenance and query of enterprise archives related to energy management. It supports the system in associating energy data of different enterprises, managing permissions, and handling business processes (such as work orders and alarms). It is the core module of "basic data governance" in energy management.

Function Details

Manage the basic information of enterprises (name, full name, customer code, profile, creation time), and provide the association basis of "enterprise - equipment - data" for functions such as energy monitoring, work order processes, and alarm management (for example, the alarm of an electric meter in a certain enterprise needs to be associated with a specific customer through the enterprise information on this page).

Operation Method



1 Query Enterprises

Enter keywords (such as the enterprise's abbreviated name, person in charge) in the Company Name/Responsible input box, and click Query to filter the matching enterprise information;
Click New Company to create a new enterprise file (enter information such as abbreviated name, full name, code, etc.).

2. Edit Enterprise Information

Click the blue edit icon in the Operation column to bring up the edit window (system support required). Modify the enterprise's full name, code, profile, etc., and save to update the information.

3.Delete Enterprise Information

Click the orange delete icon in the Operation column, and confirm to delete the enterprise file (Note: If it is already associated with business data such as equipment and work orders, deletion may cause the association to become invalid, so the association needs to be cleared in advance).

4. Pagination Browsing

Page numbers at the bottom (1, 2 ...), click to switch and view more enterprises;

3.5.2 Layer Settings

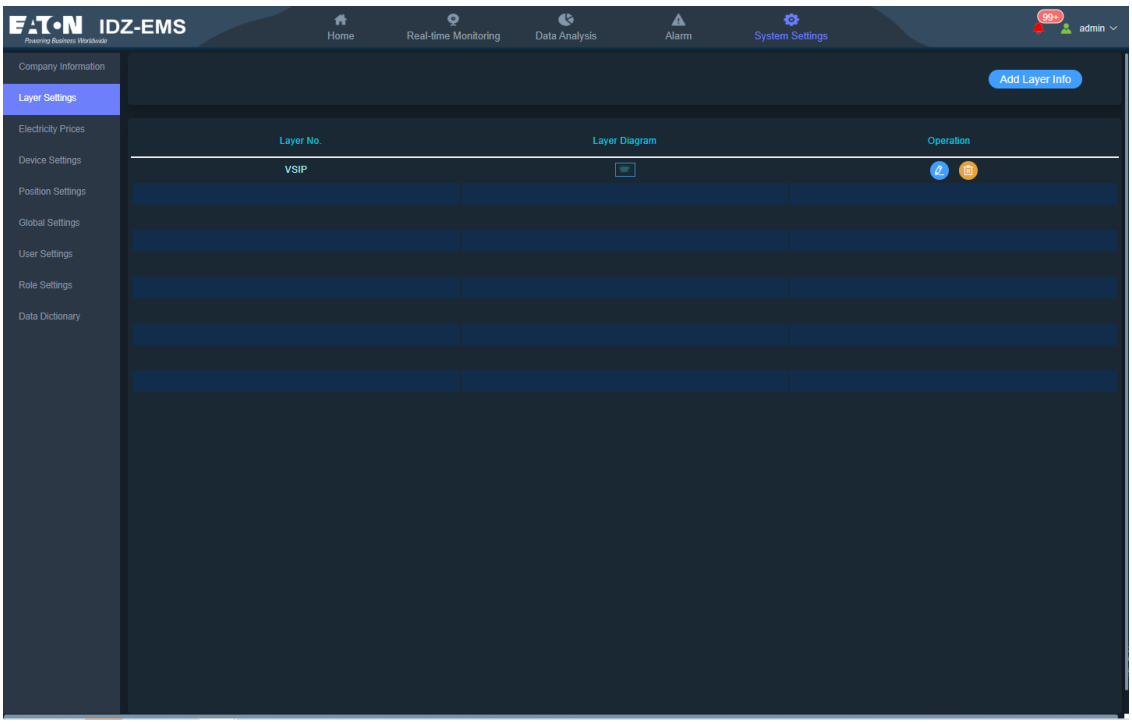
Function Positioning

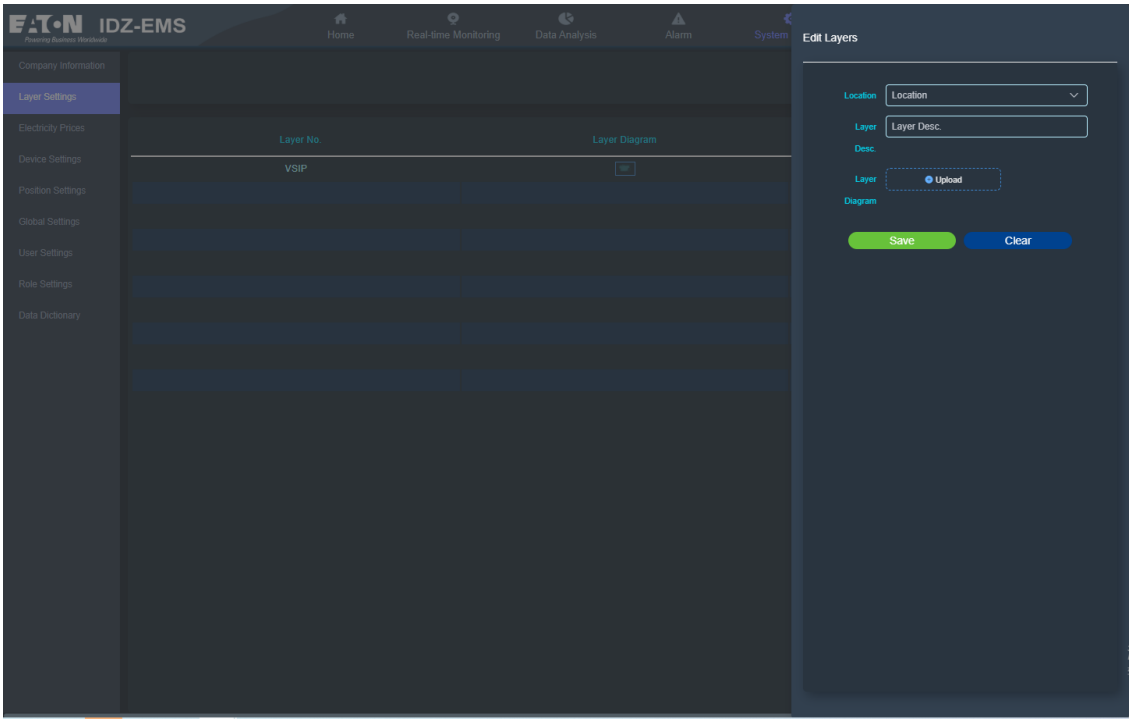
This is a configuration page in IDZ - EMS for managing system layer information. Its main role is to define and maintain hierarchical structure information related to energy management. Such hierarchical information can be used for hierarchical management of energy facilities (such as power distribution layer, electrical equipment layer, etc.), providing a basic basis for hierarchical division for the system's functions like real-time monitoring, data analysis, and alarms, and assisting in building a clear energy management architecture.

Function Details

Display of management level information: The table presents existing level information, including Layer No. (level number, such as VSIP in the example, used to uniquely identify a level), Layer Diagram (level diagram, which may be associated with visual content such as corresponding level schematic diagrams, shown as an icon in the current example), and Operation (operation items, which allow editing, deleting, etc. of level information).
Entry for adding a new level: The "Add Layer Info" button is used to create new level information. You can enter a new level number, associate the corresponding level diagram, and other content to enrich the system's level management system.

Operation Method





1. Query Level Information

If there is a query need, you can enter information such as the level number in the relevant filter input box and then perform the query operation.

2. Add a New Layer

Click the "Add Layer Info" button, enter information such as the layer number (Layer No.) and select or upload the corresponding Layer Diagram in the pop-up creation interface (system support is required, not shown in the figure). After completing the filling and submitting, a new layer information can be added to the list.

3. Edit / Delete Layer

In the Operation column, click the edit icon (blue pen-shaped icon) in the row corresponding to the layer to enter the editing interface and modify the relevant information of the layer; click the delete icon (orange trash can-shaped icon), and after confirmation, you can delete the corresponding layer information (before deletion, ensure that the layer is not associated with important energy management business data to avoid affecting system functions).

4. View the Layer Diagram

Click the icon corresponding to the Layer Diagram column to view the diagram content associated with the layer and learn about information such as the structural schematic of the layer.

3.5.3 Electricity Prices

Function Positioning

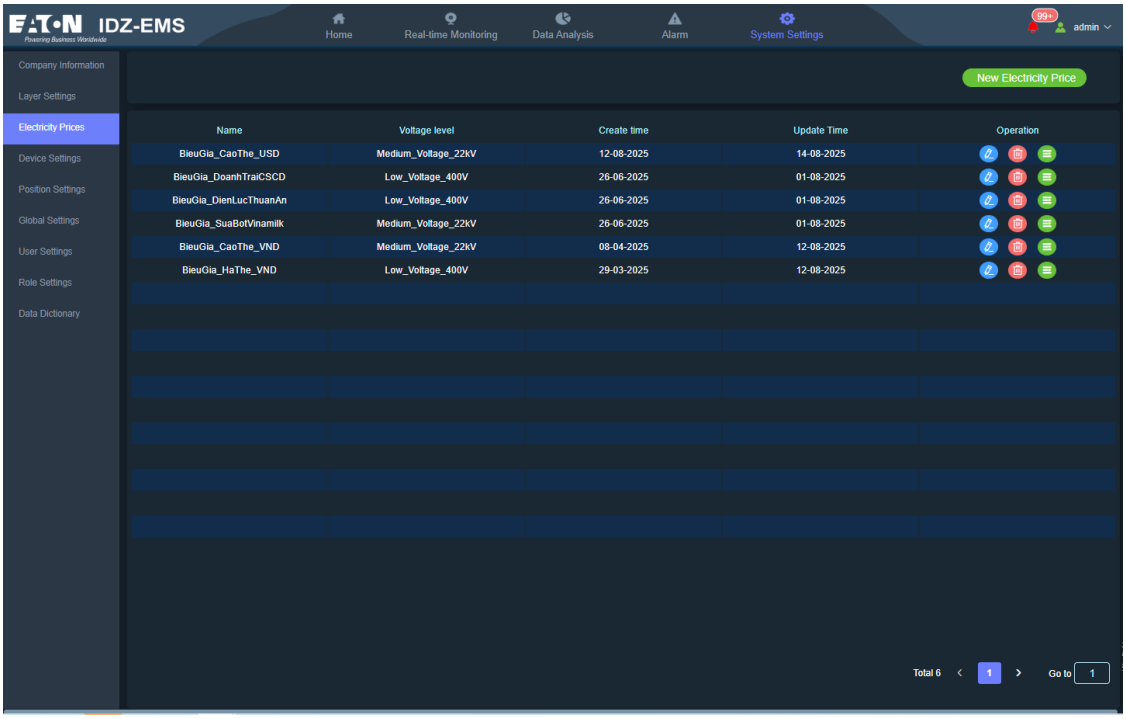
This is the electricity price management page of IDZ-EMS, which is used to centrally maintain

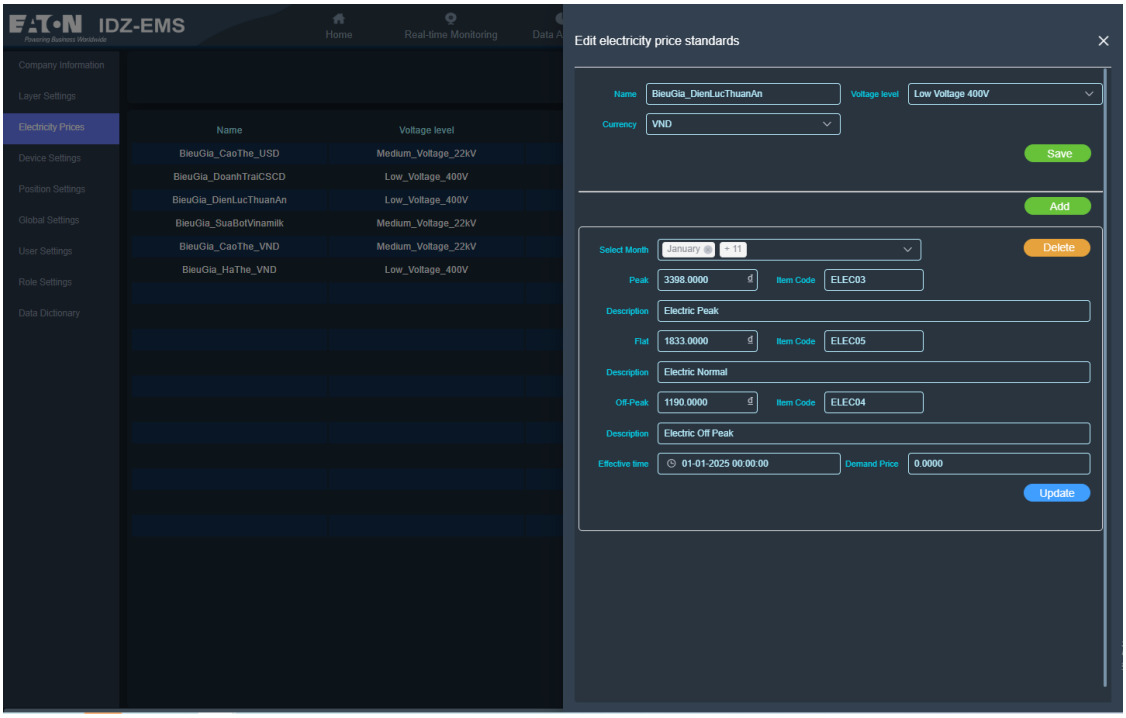
electricity price rules for different voltage levels and different currencies (such as USD, VND). It provides basic data for energy cost accounting and optimization of electricity consumption strategies (such as peak-shaving electricity usage), and is a core module for "cost control + refined operation" in energy management.

Function Details

Manage basic information of electricity prices (name, voltage level, creation/update time), which provides a basis for energy billing, cost analysis, and energy-saving decision-making (for example, if an enterprise uses 22kV voltage, the system calculates electricity fees through the electricity price rules on this page).

Operation Method





1.Basic Information Filling (Click the "New Electricity Price" button to add)

Name: Enter the rule name (e.g., "Summer Electricity Price") to distinguish different rules.
Voltage level: Select the corresponding voltage from the drop-down list (e.g., 400V) to match the equipment voltage.
Currency: Select the settlement currency from the drop-down list (e.g., VND) to determine the electricity fee unit.

2. Time-of-use Electricity Price Configuration

Select Month: Select the months when the rule takes effect from the drop-down list (e.g., select June-August for summer).

3.Fill in the Time Period Price

Peak, Flat, Off-Peak: Enter the electricity prices for the corresponding time periods.
Item Code/Description: Fill in the code (for system identification) and description (e.g., "Peak Time Period").

4. Effective and Operational

Effective time: Select the date when the rule takes effect (e.g., 01-06-2025).

5. Button Operations

Save: Temporarily save basic information (name, voltage, currency).
Add: Add multiple sets of time period rules (e.g., different peak and off-peak prices for summer/winter).
Delete: Delete the current set of time period rules.
Update: Finally save all settings, and the rules will take effect for billing.

3.5.4 Device Settings

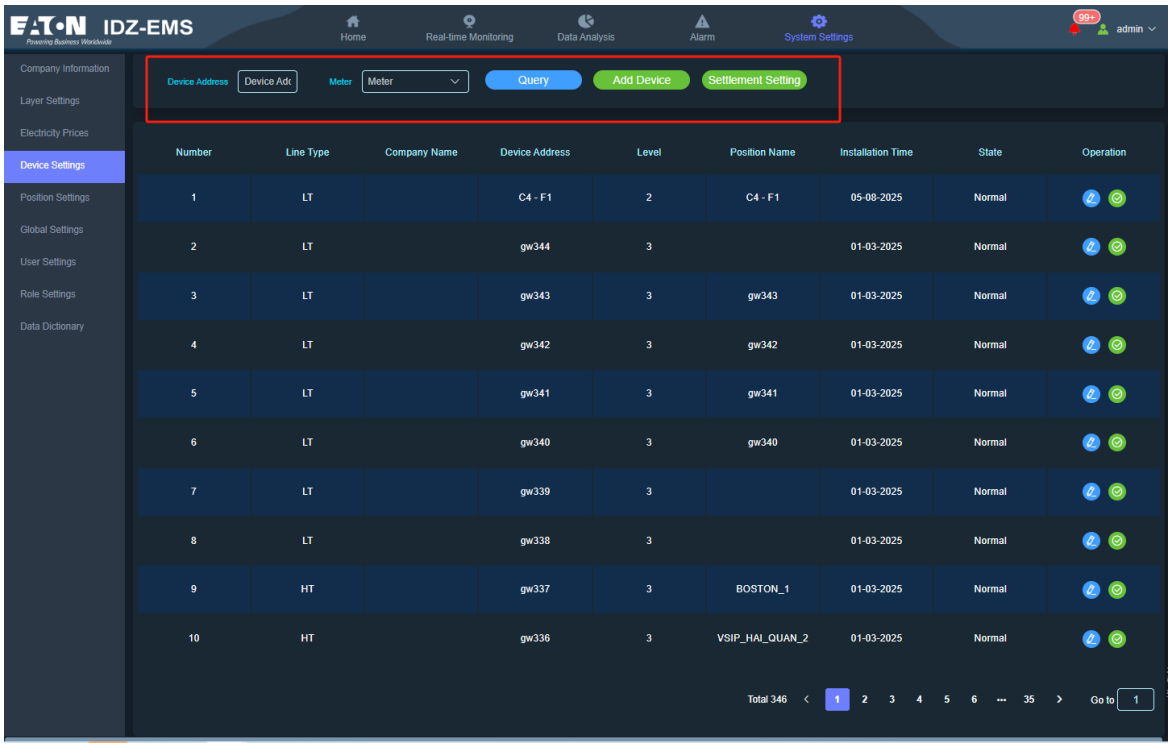
Function Positioning

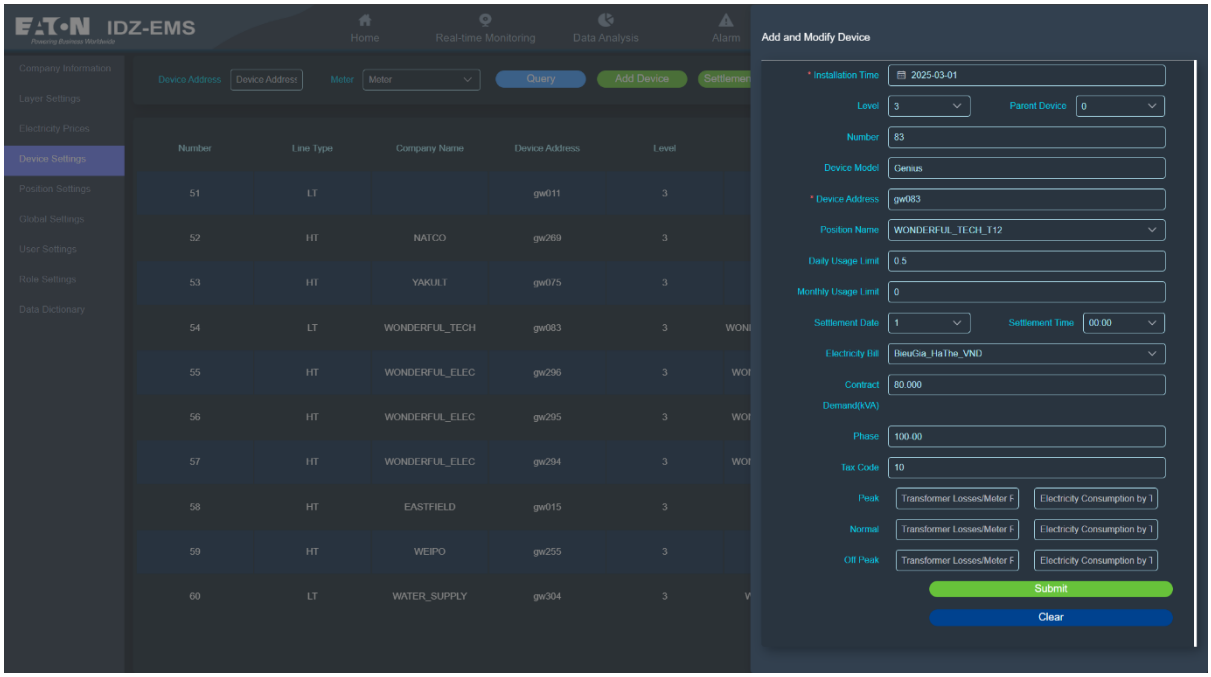
This is the equipment management module of IDZ-EMS, which is primarily used for the full-life-cycle management of power equipment (such as electric meters, sensors). It covers the entry, query, and batch update of equipment information, supports energy monitoring, billing, operation and maintenance, and other businesses, and serves as the foundation for the "equipment - data - business" linkage in the system.

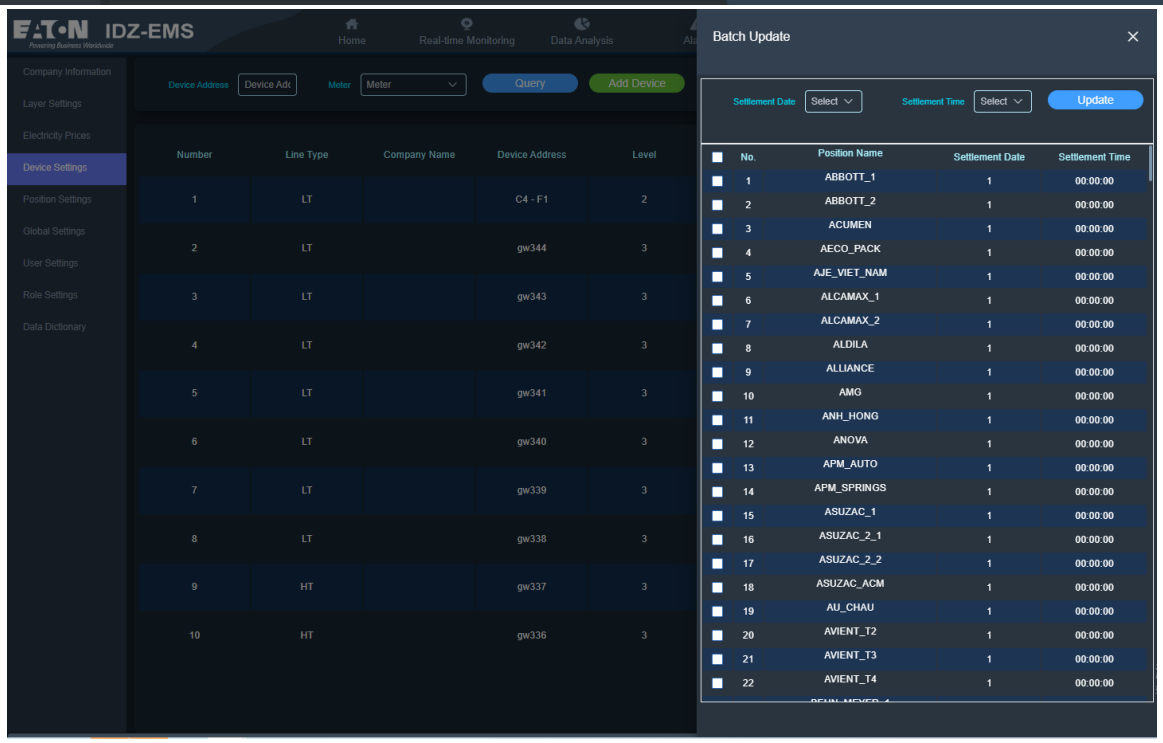
Function Details

Equipment Ledger Management: Establish "digital files" for equipment (including serial number, type, address, status, etc.), which provide an associated basis for energy data collection, alarms, and work order processes.
Full-process Coverage: From "adding a single device" to "batch updating multiple devices", it adapts to different management scenarios (such as new equipment network access, information maintenance of old equipment).
Business Linkage: Equipment information is synchronized to the real-time monitoring, alarm, and electricity price modules to ensure the accurate operation of functions such as "equipment abnormality alarm" and "billing by equipment".

Operation Method







1. Device Query

In the filter area of the Device List page, you can enter device address keywords in the "Device Address" input box and select a meter type from the "Meter" drop-down menu. After completing the entry/selection, click the Query button to filter out devices that meet the criteria, allowing you to quickly locate the target device for viewing or management.

2. Single Device Management (Add / Edit)

Adding a device: Click the "Add Device" button on the device list page to bring up the "Add and Modify/Device" pop-up window. In the pop-up window, fill in the required fields marked

with * (such as Installation Time, Device Address), select the associated enterprise, line type and other information. After completing the filling, click the "Submit" button to save, and the new device information will be added to the device list.
Editing a device: Click the edit icon corresponding to the "Operation" column on the device list page. The pop-up window will automatically load the existing information of the device. Adjust the fields that need to be modified (such as device address, daily usage limit, etc.), then click the "Submit" button to submit, and the device information will be updated.

3. Batch Update of Multiple Devices

On the "Batch Update" page, first check the devices for which you need to adjust the settlement information (select via the checkboxes in front of the devices). Then, select the new Settlement Date and Settlement Time at the top of the page. After completing the settings, click the Update button to batch modify the settlement rules of the selected devices, achieving unified adjustment of the settlement cycles for multiple devices.

3.5.5 Position Settings

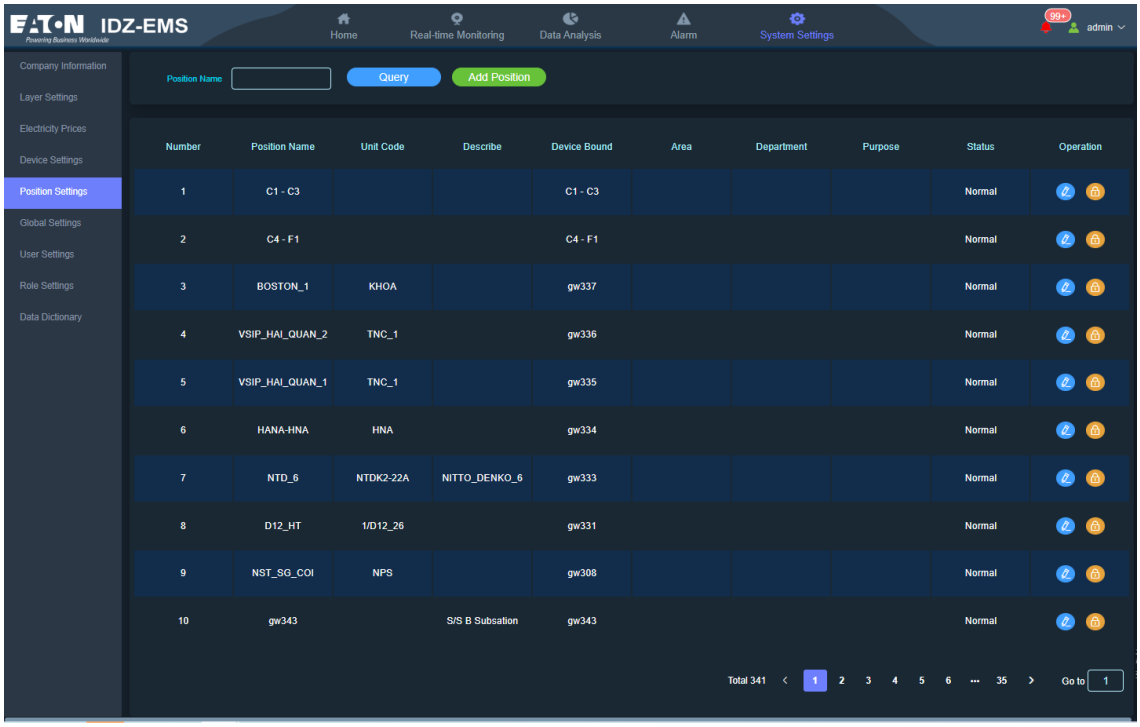
Core Translation

This is the Location Information Management page of IDZ-EMS. It is used to maintain the physical location files of energy equipment (such as floors, workshops, and areas), associate the binding relationship between equipment and locations, and provide spatial dimension association of "Location - Equipment - Data" for energy monitoring, work order scheduling, and energy efficiency analysis. It serves as the foundation for the system to build an "Energy Topology Map".

Function Details

Label devices with "location tags" (e.g., C1-C3 corresponds to a specific workshop), enabling operation and maintenance (O&M) personnel to quickly locate devices. For instance, a "gw337 equipment failure" can be associated with the BOSTON_1 location.

Core Translation



1. Query Location Information

Enter keywords (e.g., C1-C3) in the "Position Name" input box, then click "Query" to filter location records that match the criteria (e.g., quickly finding the location information of a specific workshop).

2. Add Location Information

Click "Add Position" to bring up the new creation window (system support is required; not shown in the figure). Fill in information such as Position Name (mandatory), Device Bound (optional, for associating equipment), and Unit Code (optional). After saving, a new position file will be created.

3. Editing/Deleting Location Information

Editing: Click the blue edit icon in the "Operation" column to modify the position name, bound equipment, description, etc. After saving, the information will be updated (e.g., when a workshop is expanded, modify the "Describe" field to add "New Equipment Area").
Deletion: Click the orange delete icon in the "Operation" column, and the useless position information will be deleted after confirmation. (Note: If the position has been associated with equipment or work orders, deletion may invalidate the association of business data, so it is necessary to clean up the associations in advance.)

4. Pagination and Batch Management

Click the page numbers at the bottom (1, 2, ...) to switch pages and view more locations.
By combining Query filtering with editing/deletion, you can maintain location information in batches (e.g., uniformly modify the "Department" of a specific region to "Production Department").

3.5.6 Global Settings

Function Positioning

This is the Global Alarm Settings page of IDZ-EMS (Energy Management System), which is used to uniformly configure sound and threshold rules related to system alarms. By defining prompt sounds for alarms of different levels, as well as alarm trigger conditions such as three-phase voltage imbalance, three-phase current imbalance, and electricity meter time error, the system can issue corresponding sound warnings and accurately determine whether to trigger an alarm when there are abnormalities in equipment or energy data. This ensures the stable operation of the energy system and assists operation and maintenance (O&M) personnel in responding to faults in a timely manner.

Function Details

Alarm Sound Configuration (Alarm Sound)： Prompt sounds can be set separately for Level 3 (Level 3 Alarm), Level 4 (Level 4 Alarm), and Level 5 (Level 5 Alarm). Each level has an "Upload" (upload) button for replacing the alarm sound file, a "Play" (play) button for previewing the currently set alarm sound, and the name of the uploaded sound file (e.g., 202508…, 202507…) is displayed below to facilitate identification of the current configuration.

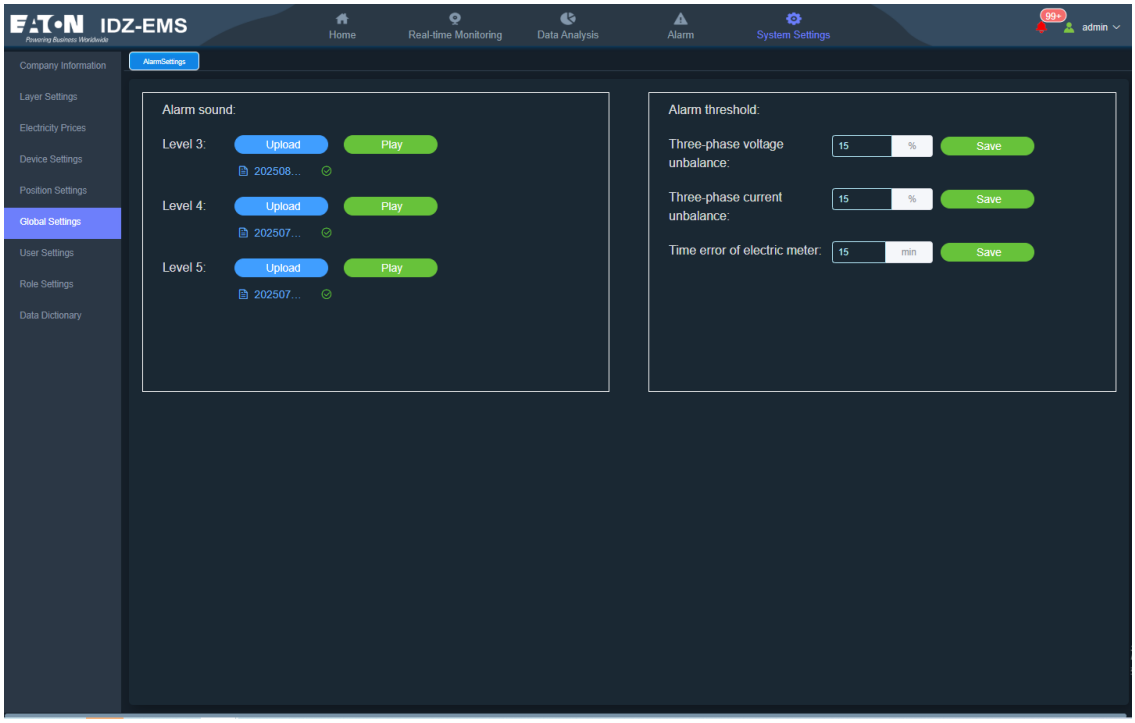
Alarm Threshold Configuration (Alarm Threshold)： It includes threshold settings for three key alarm conditions:

Three-phase Voltage Unbalance (three-phase voltage unbalance): Set the threshold for voltage unbalance degree (currently 15%). When the system detects that the three-phase voltage unbalance degree exceeds this value, the corresponding alarm will be triggered.

Three-phase Current Unbalance (three-phase current unbalance): Set the threshold for current unbalance degree (currently 15%). If the three-phase current unbalance degree exceeds this value, the system will trigger an alarm.

Electricity Meter Time Error (electricity meter time error): Define the threshold for electricity meter time error (currently 15 min). When the electricity meter time error exceeds this duration, an alarm will be triggered. Each threshold configuration is followed by a "Save" (save) button, which is used to confirm modifications and apply the new threshold rules.

Operation Method



1. Alarm Sound Settings

Uploading Sound: For the alarm level to be set (e.g., Level 3), click the corresponding "Upload" button. In the pop-up file selection window, select a suitable local audio file and complete the upload to replace the original alarm sound of this level.
Previewing Sound: Click the "Play" button of the corresponding level (e.g., Level 4) to preview the alarm prompt sound currently configured for this level and confirm whether the sound meets the requirements.

2. Alarm Threshold Settings

In the threshold input box to be adjusted (e.g., the input box corresponding to Three-phase Voltage Unbalance), enter a new value (which must comply with actual operation and maintenance requirements and system logic). For example, change the three-phase voltage unbalance threshold from 15% to 12%.
Saving Threshold: After entering the new threshold, click the "Save" button of the corresponding item. The system will save the new threshold settings, and when monitoring data subsequently, it will determine whether to trigger an alarm based on the new threshold.

3.5.7 User Settings

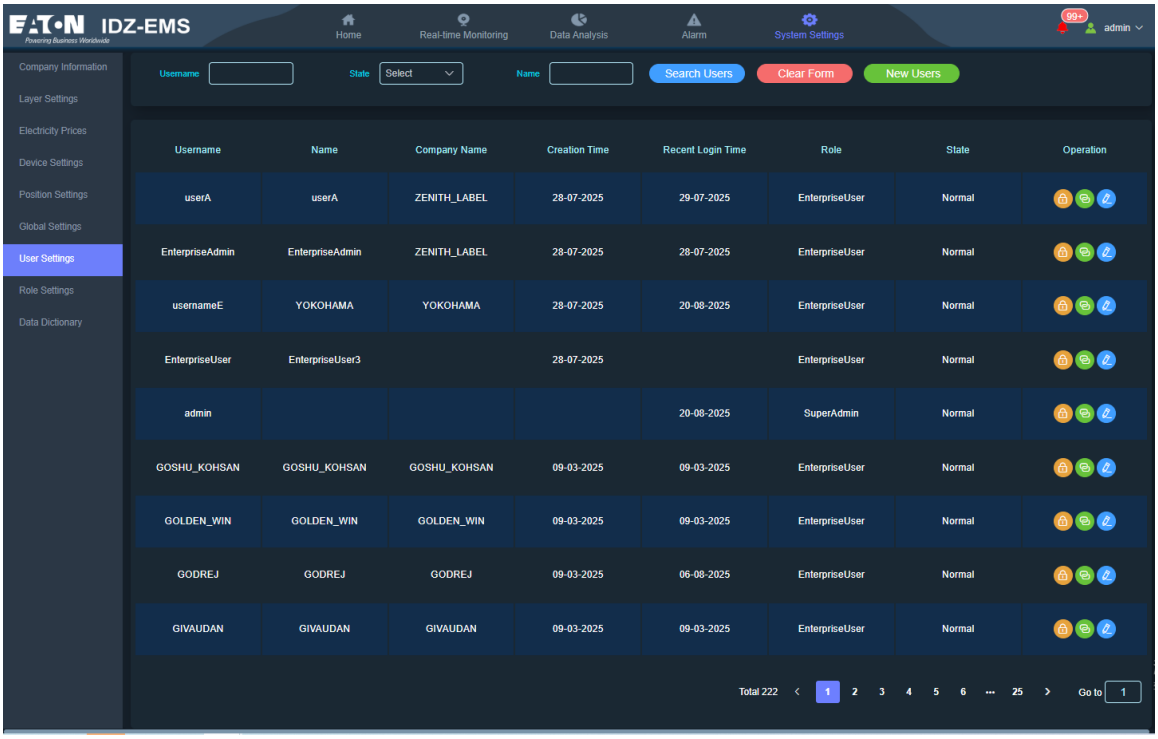
Function Positioning

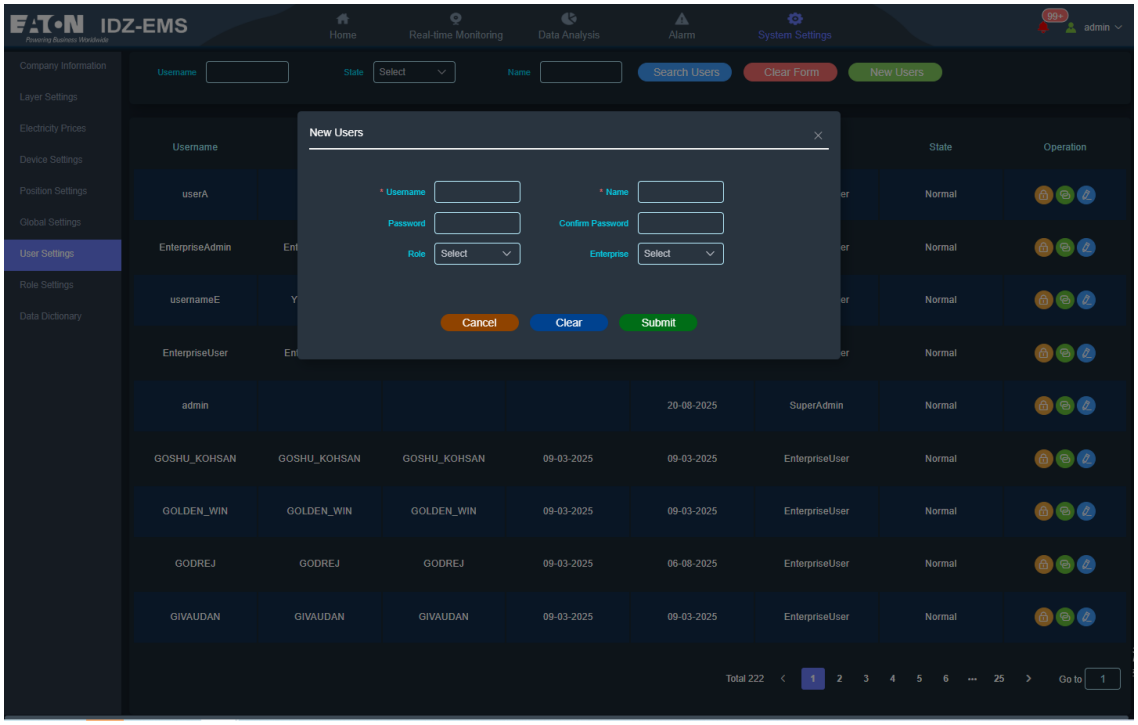
This is the User Management Center of IDZ-EMS, which is used for unified management and control of the account permissions of system users. It covers "user addition, deletion, modification and query + role/enterprise binding", ensuring that different roles (such as administrators and enterprise users) can access data and perform operations as needed in energy management. It is the core module of the system's "permission security system".

Function Details

Roles (Role) are used to distinguish between SuperAdmin and EnterpriseUser, controlling different users' access permissions to functions such as "Real-time Monitoring", "Alarm Management", and "System Settings".
Company Name is bound to the enterprise that the user belongs to, ensuring that enterprise users can only view/operate the energy data of their own enterprise (e.g., userA can only access the equipment and work orders of ZENITH_LABEL).
Security Audit and Traceability: It records Creation Time and Recent Login Time, which are used for account lifecycle management and abnormal login auditing.

Operation Method





1. User Query and Filtering

Enter keywords (e.g., userA) in the Username/Name input box, select Normal for State, and click Search Users to filter out the matching user list.
Click Clear Form to clear the filtering criteria and resume displaying all users.

2. New User Creation (New Users)

Click "New Users" and fill in the required fields marked with * in the pop-up window:
Username/Name: Set the login account and display name (e.g., userB);
Password/Confirm Password: Enter the password and confirm it again (must meet complexity requirements, such as letters + numbers);
Select EnterpriseUser/SuperAdmin for Role (according to actual permission requirements) and select the affiliated enterprise (e.g., ZENITH_LABEL) for Enterprise;
Click "Submit" to save, and the new user can log in to the system (permissions take effect simultaneously).

3. Existing User Management

Editing Users: Click the pen icon in the "Operation" column of the list. The pop-up window will load the user's information, allowing modification of the name, password, and bound enterprise (e.g., when an employee is transferred, change the "Enterprise" to the new company).
Freezing/Unfreezing: Click the lock icon to freeze abnormal accounts (such as those with password leaks). Once frozen, the user cannot log in. (To unfreeze, click the same lock icon again when the account is back to normal.)
Adjusting Permissions: Click the group icon to modify the "Role" (e.g., promoting a regular user to an administrator), with the system function access permissions updated simultaneously.

4. Pagination

Click the page numbers (1, 2, ...) at the bottom to switch between pages and view users across multiple pages.

3.5.8 Role Settings

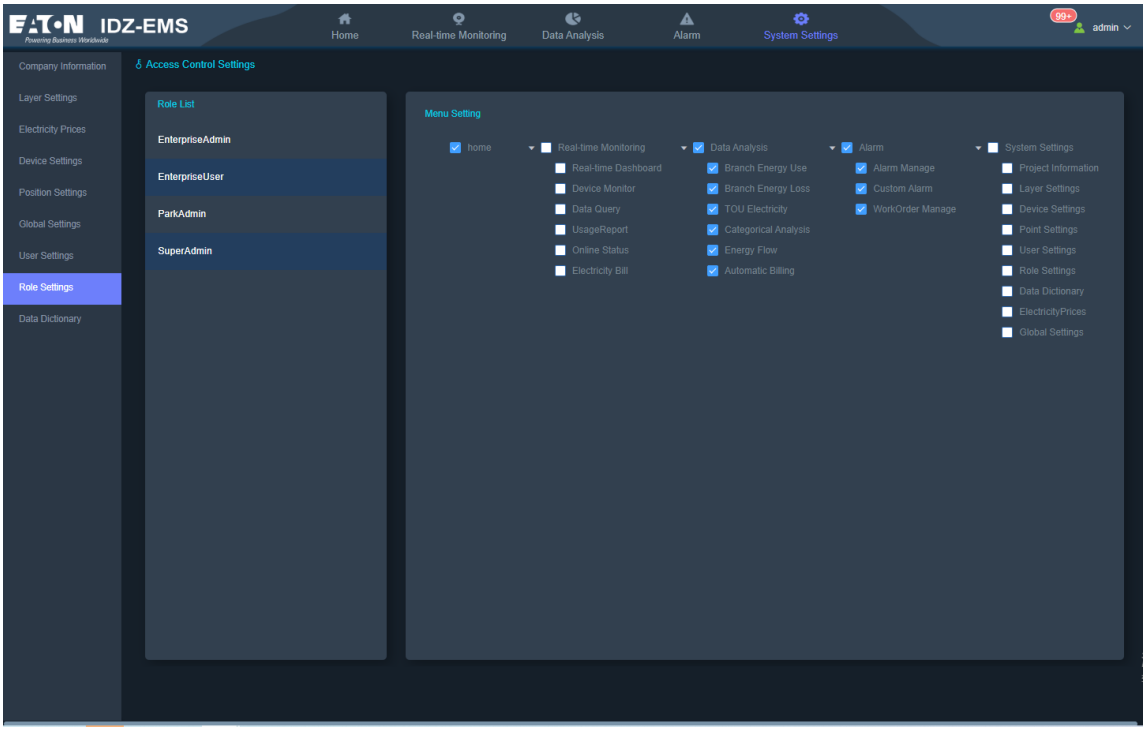
Function Positioning

This is the Role Permission Configuration Center of IDZ-EMS, which is used to define the system menu access permissions for different roles (such as administrators and enterprise users). It realizes the precise management and control of "Role - Permission - Function", ensuring that system functions are opened on demand. This not only meets the business needs of different positions but also prevents data risks caused by unauthorized permission abuse.

Function Details

Preset roles such as SuperAdmin (Super Administrator with full permissions) and EnterpriseAdmin (Enterprise Administrator in charge of the enterprise's own data) through the Role List, enabling quick adaptation to the enterprise's organizational structure.
Support modifying role permissions at any time (e.g., adding "Data Analysis" menu permission to PartAdmin), so as to respond to changes in business processes.

operation Method



1. Select Role

Click the role (e.g., EnterpriseAdmin) in the left-side Role List, and the right-side Menu Setting will automatically load the current menu permission configuration for that role (checked menus represent the functions accessible to the role).

2. Adjust Menu Permissions

Check/Uncheck menus: In the Menu Setting on the right, click the checkboxes before the menus. Checking a checkbox grants permission for that function (e.g., checking "Data Analysis" for PartAdmin allows the role to access the data analysis module); unchecking a checkbox hides the menu (e.g., revoking "System Settings" permission from EnterpriseUser).
Save permissions: After modifying permissions, the system usually saves automatically (or you may need to click the "Save" button, depending on the actual interface logic). The new permissions will take effect when the role logs in next time.

3.5.9 Data Dictionary

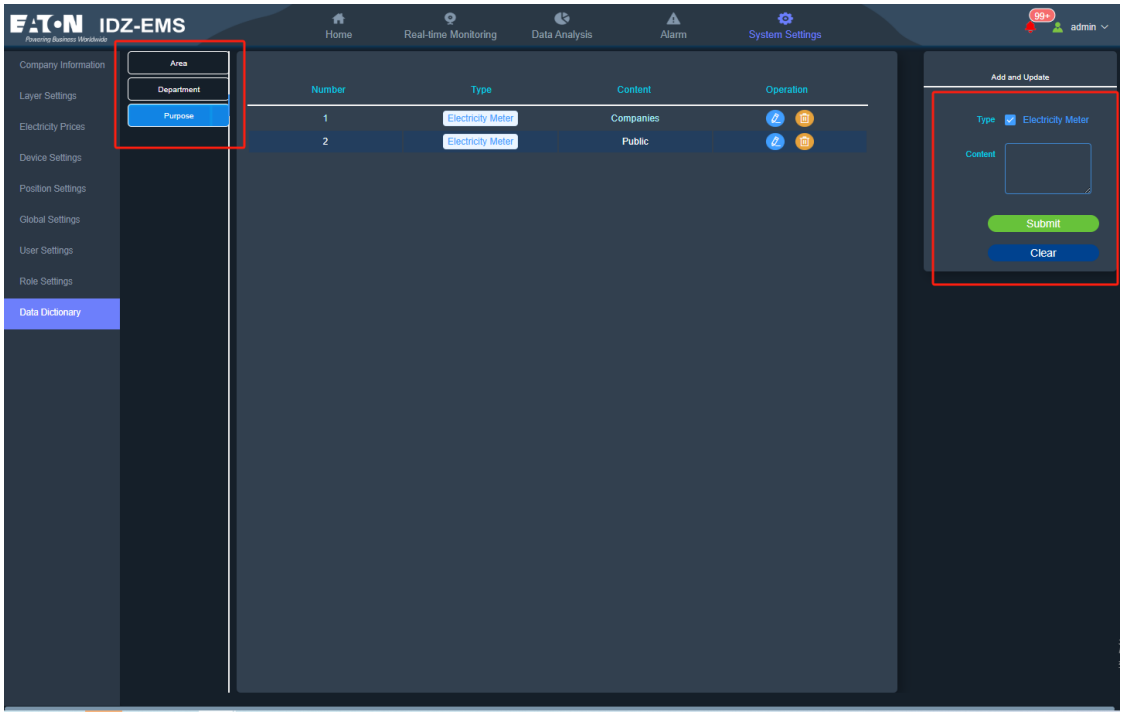
Function Positioning

This is the Data Dictionary Management Page of IDZ-EMS, which is used to uniformly maintain the basic data classifications related to energy management (such as Area, Department, and Purpose) and specific dictionary items (such as the location and code of electric meters). It provides standardized basic data support for various system modules (equipment management, energy consumption analysis), ensuring data consistency and accuracy.

Function Details

On the left side, three tabs - Area, Department, and Purpose - categorize basic data by different dimensions. You can switch between these tabs as needed to maintain the dictionary contents under the corresponding categories.
The middle table lists specific dictionary items in numerical order (by Number), including:
Type: Currently all set to "Electricity Meter", indicating these are electricity meter-related dictionaries;
Content: Specific details such as the electricity meter's location code "S/S 4";
Operation column: Provides edit and delete functions.
In the "Add and Update" area on the right, you can select the Type (currently "Electricity Meter", with support for expanding to other types) and enter Content to add new dictionary items or update existing ones. This ensures that basic data can be dynamically adjusted as business needs change.

Operation Method



1. Category Switching

Click the Area, Department, and Purpose tabs on the left to switch to the dictionary management interface under the corresponding category, and view and maintain basic data of different dimensions.
Query dictionary items: In the middle table area, you can view information such as the type and specific content of existing dictionary items by browsing the table content, and you can also quickly locate specific dictionary items by number.
Edit/Delete dictionary items: In the Operation column, click the edit icon (blue pen shape) to modify the content of the corresponding dictionary item; click the delete icon (orange trash can shape), and the dictionary item can be deleted after confirmation (before deletion, ensure that no other business modules depend on the dictionary item to avoid data abnormalities).

2. Add / Update

In the "Add and Update" area on the right, select the Type (e.g., Electricity Meter), enter new dictionary content in the Content input box (e.g., add the new electric meter location code S/S 5), and click the Submit button to add a new dictionary item. If you need to update an existing dictionary item, you can first find the corresponding item, enter the updated content on the right, and click Submit to complete the update.