AzurE e-Ship Calculator

Product Design Manual

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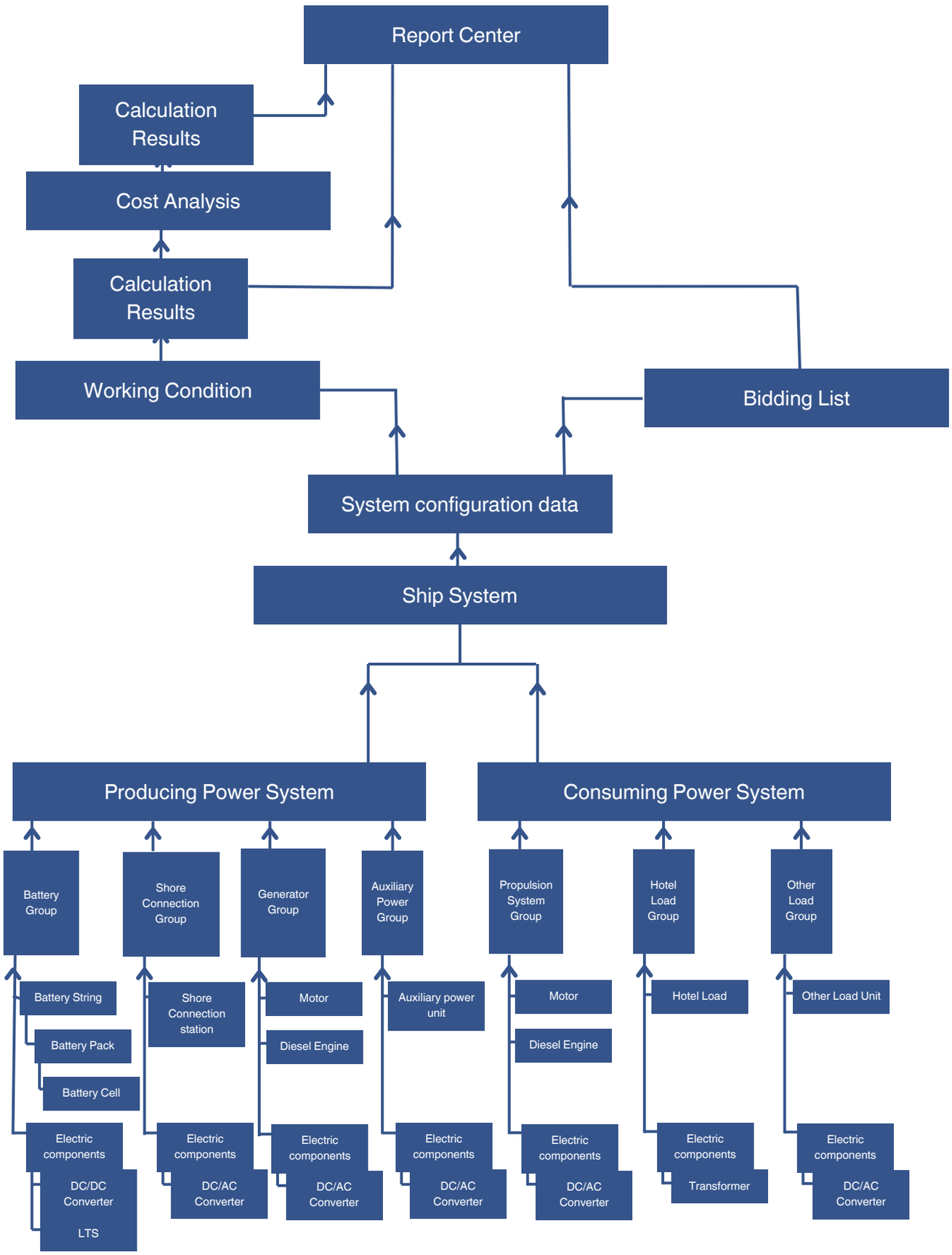
.

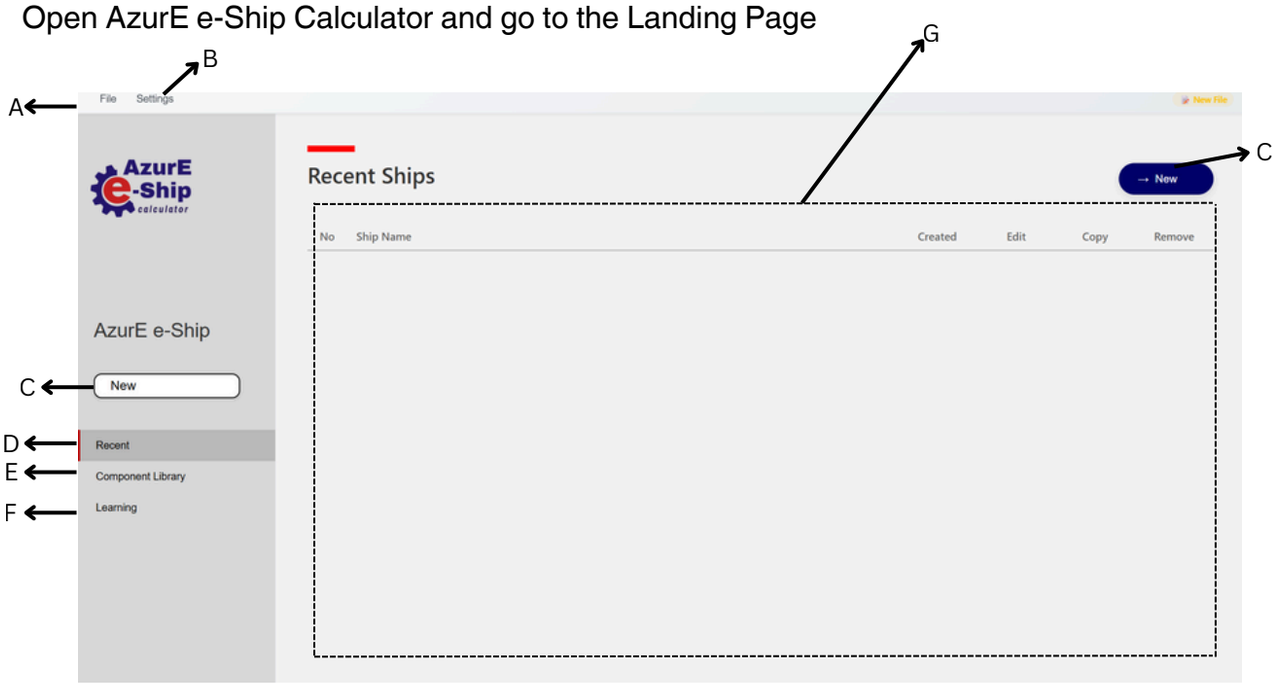
Edition：1.02

AzurE e-Ship Calculator software structure diagram

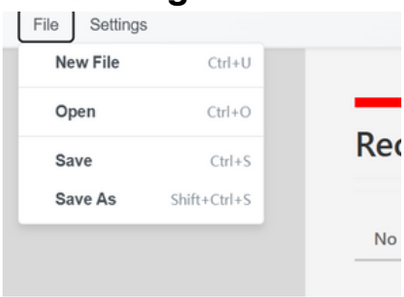


1.1 Landing Page

Open AzurE e-Ship Calculator and go to the Landing Page

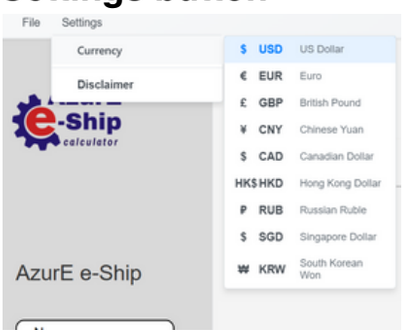


A，File Settings



- **Core Function:** Click **File** to access the functions New File, Open File, Save, and Save As. The file format is .txt.

B， Settings button



- **Core Function:** Click Settings to access Currency Settings (for the upcoming Bidding List feature) and the Disclaimer.

C, New button

- **Core Function:** Click New Vessel System to enter page 2.1.

D， Recent menu

- **Core Function:** You can view, create, and modify vessel systems here. After clicking, all vessel systems will be displayed in the G area on the right.

E, Component Library menu

- **Core Function:** You can view, create, and modify components here. After clicking, all component information will be displayed in the G area on the right.

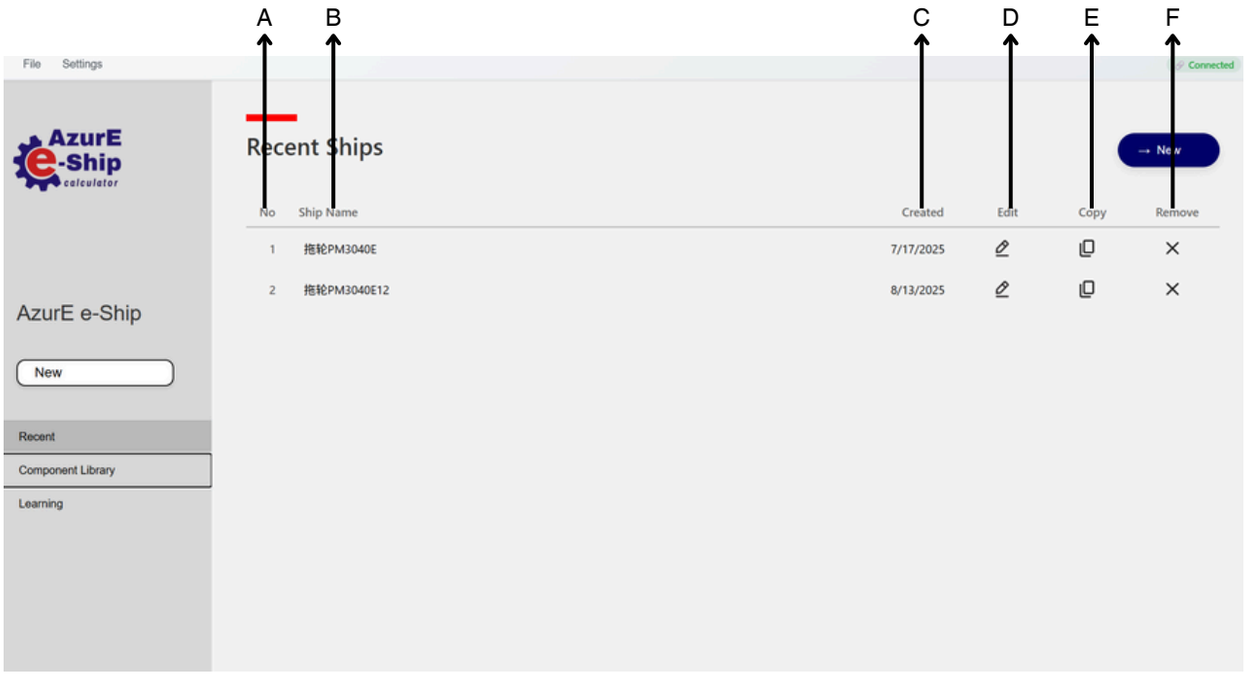
F, Learning menu

- **Core Function:** You can access the software user manual here.

G, Display file area

- **Core Function:** You can view, create, and modify files here.

1.2 Recent Menu



A，No

- **Core Function:** Displays the current No, sorted by creation order.

B，Ship Name

- **Core Function:** Displays the vessel name, which can be edited.

C，Create Time

- **Core Function:** Displays the time the ship was created

D，Edit

- **Core Function:** Click to modify the current ship system

E，Copy

- **Core Function:** Click to copy the current vessel system file.

F， Remove

- **Core Function:** Click to delete the current vessel system file (cannot be undone).

1.3 Component Library

A，No

- **Core Function:** Displays the current No, sorted by creation sequence.

B，Description

- **Core Function:** Displays the component name, which can be edited.

C，Edit

- **Core Function:** Click to edit the current component file.

D， Remove

- **Core Function:** Click to delete the current component file (cannot be undone).

E，Battery

- **Core Function:** Click to configure battery information (including cells, battery packs, and battery clusters).

F，Propulsion

- **Core Function:** Click to set propulsion device information (including motor, diesel engine)

G，Shore Connection

- **Core Function:** Click to configure shore power equipment information (including onshore charging stations).

H，Auxiliary Power Unit

- **Core Function:** Click to configure auxiliary power unit information (including all auxiliary power units).

I，Hotel Load

- **Core Function:** Click to configure onboard electricity information (including all onboard electrical devices).

J，Other Load

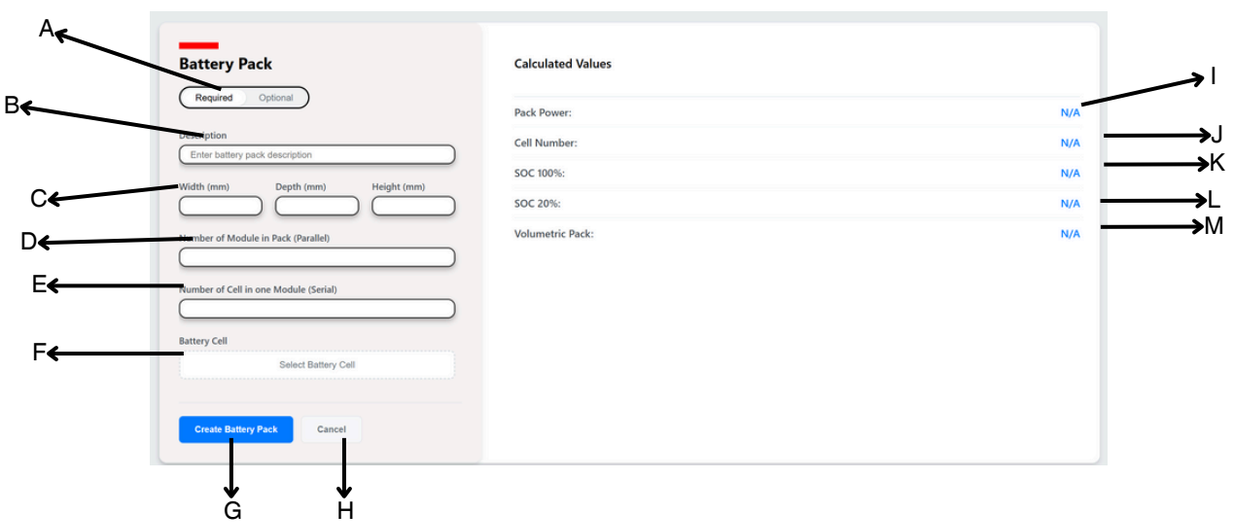
- **Core Function:** Click to configure other electrical devices (including additional electricity consumption).

K，Electric Converter

- **Core Function:** Click to configure other electrical components (including DC/DC converters, DC/AC converters, LTS, string controllers, and transformers).

1.4 Create a new component setting (battery pack example)

Core Function: Users can enter various parameters of the ship's battery packs on this page and verify their inputs. The page layout places the Battery Pack Setting input section on the left, while the right side displays a verification section where information is calculated automatically using formulas.



A， Required and optional data

- **Core Function:** You can switch between required and optional fields. Required fields are included in calculations, while optional fields are not. The system only allows saving after all required fields are completed.

B，Pack Description

- **Core Function:** Name the battery pack

C， Pack Outline Diamension

- **Core Function:** Set the battery pack dimensions, including depth, width, and height. Input range: 0–999.

D，Number of Module in Pack(P)

- **Core Function:** Set the number of parallel cell groups, selectable from 1–3. This can be considered as the number of cell rows.

E，Number of Module in Pack(S)

- **Core Function:**Set the number of cells in series, with an input range of 1–99. This can be considered as the number of cell columns.

F， Choose Battery Cell

- **Core Function:** Select the type of cells to be used in the battery pack. Clicking this button will navigate the page to 1.4.2.

G, Create button

- **Core Function:**Users confirm their input data, after which the system verifies the data and performs calculations. The results are displayed on the right side of the page and saved to a .txt file. In Options, battery pack parameters are retrieved from the archive library and displayed for user selection.
- The Create button can only be clicked after all required fields are completed and all values are within the specified ranges; otherwise, it remains inactive. The system must validate whether the user inputs are valid.

H，Cancel

- **Core Function:** Exit the battery pack settings to return to page 1.1.

I，Pack Power

- **Core Function:** Output the battery pack capacity.

J，Number of Cell

- **Core Function:** Output the number of cells within the battery pack.

K，Pack 100% SOC Voltage(V)

- **Core Function:** Output the battery pack voltage at 100% state of charge.

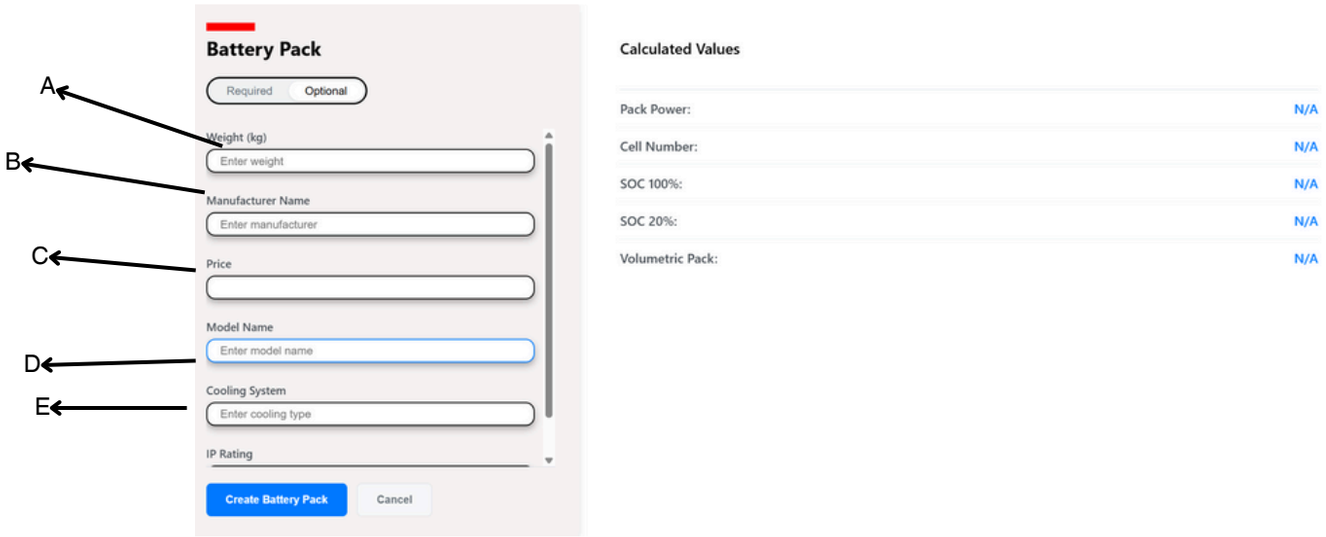
L，Pack 20% SOC Voltage(V)

- **Core Function:** Output the battery pack voltage at 20% state of charge.

M，Pack Volumetric Energy

- **Core Function:** Output the battery pack volumetric energy density.

1.4.1 Create a new Component and configure optional settings.



A， Weight(kg)

- **Core Function:** Enter the battery pack weight.

B，Manufactureer Name

- **Core Function:** Enter the battery pack manufacturer’s name, which will be displayed later in the Bidding List.

C， price

- **Core Function:** Enter the battery pack price. Note that no unit is required here; the unit will be displayed later in the Bidding List.

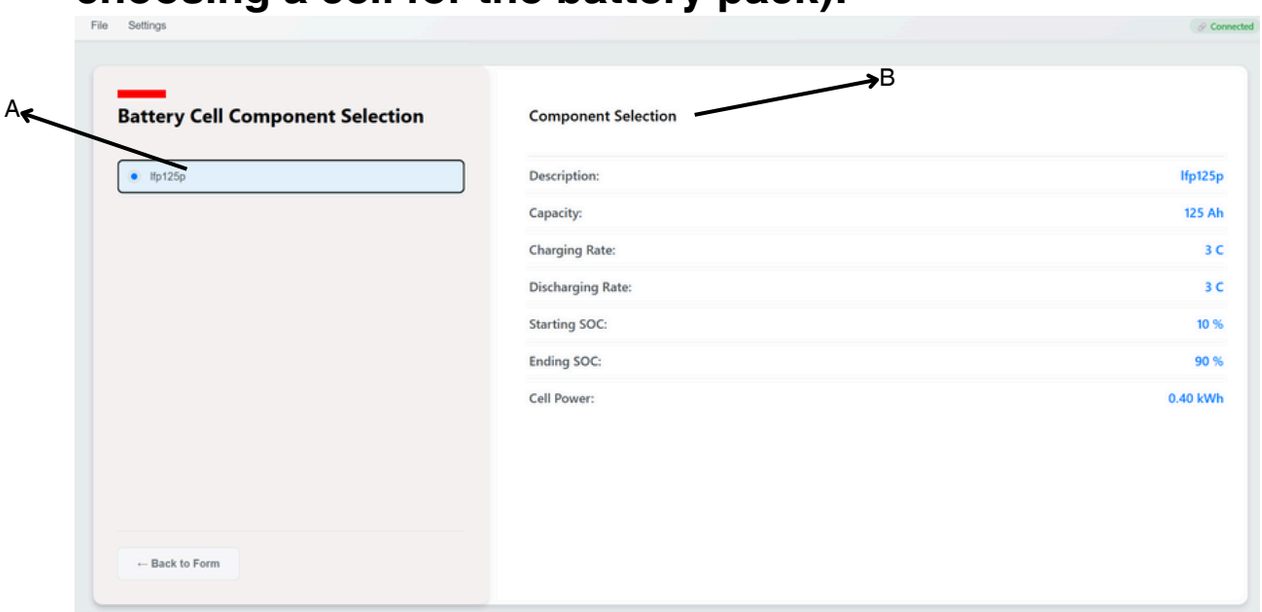
D，Model Name

- **Core Function:** Set the battery pack model, which will be displayed later in the Bidding List.

E，Cooling System

- **Core Function:** Configure the battery pack’s water-cooling system.

1.4.2 Select a component to configure (for example, choosing a cell for the battery pack).



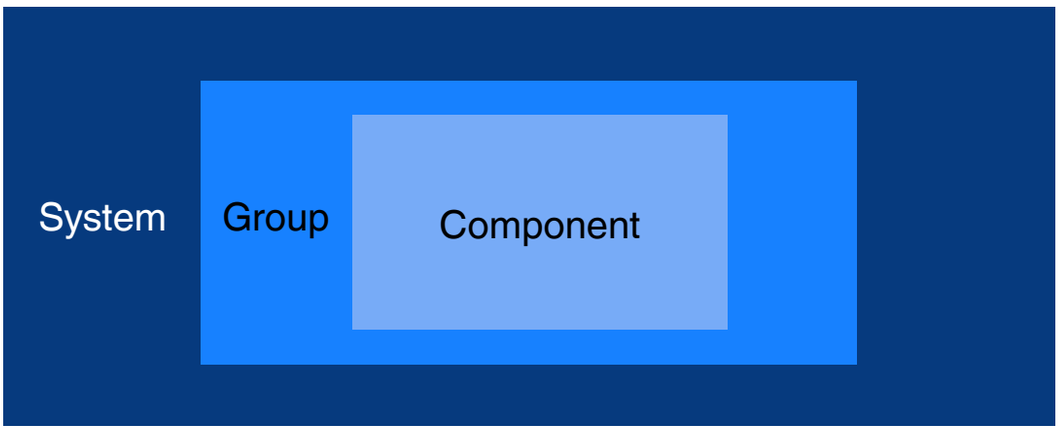
A， Battery Cell Component Selection Area

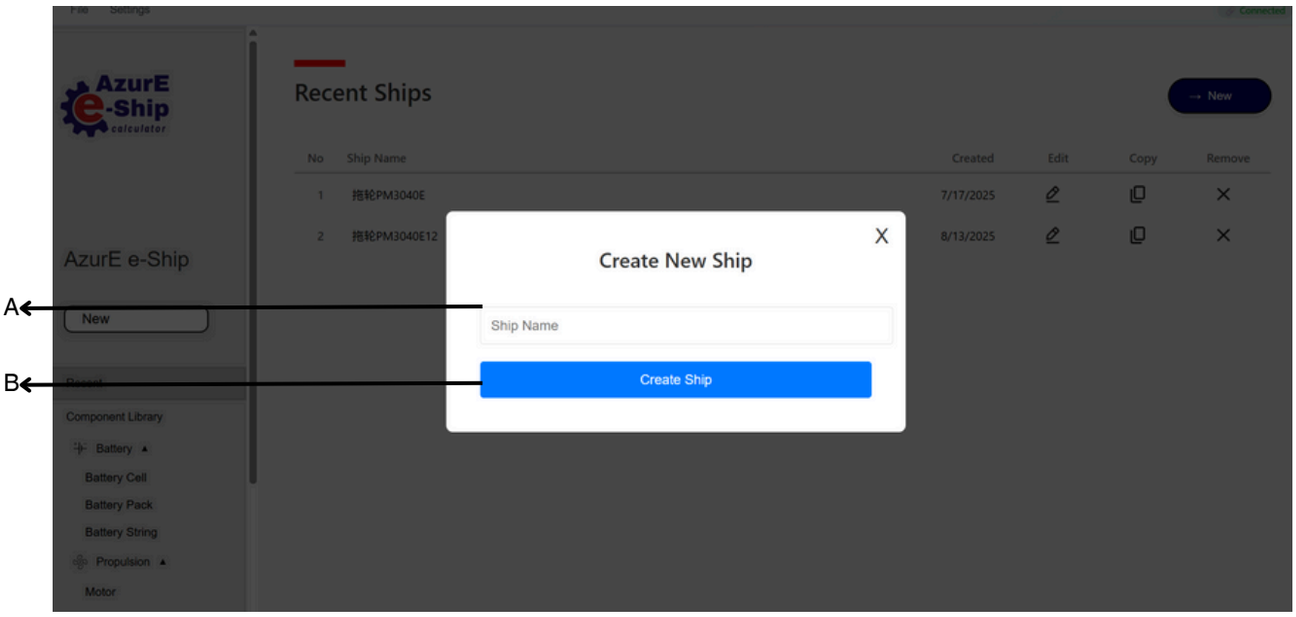
- **Core Function:** All cell names are displayed here, and the user can select one.

B，Component Selection

- **Core Function:** All data for this component will be displayed here.

2.1 New built ships





A， Input Ship Name

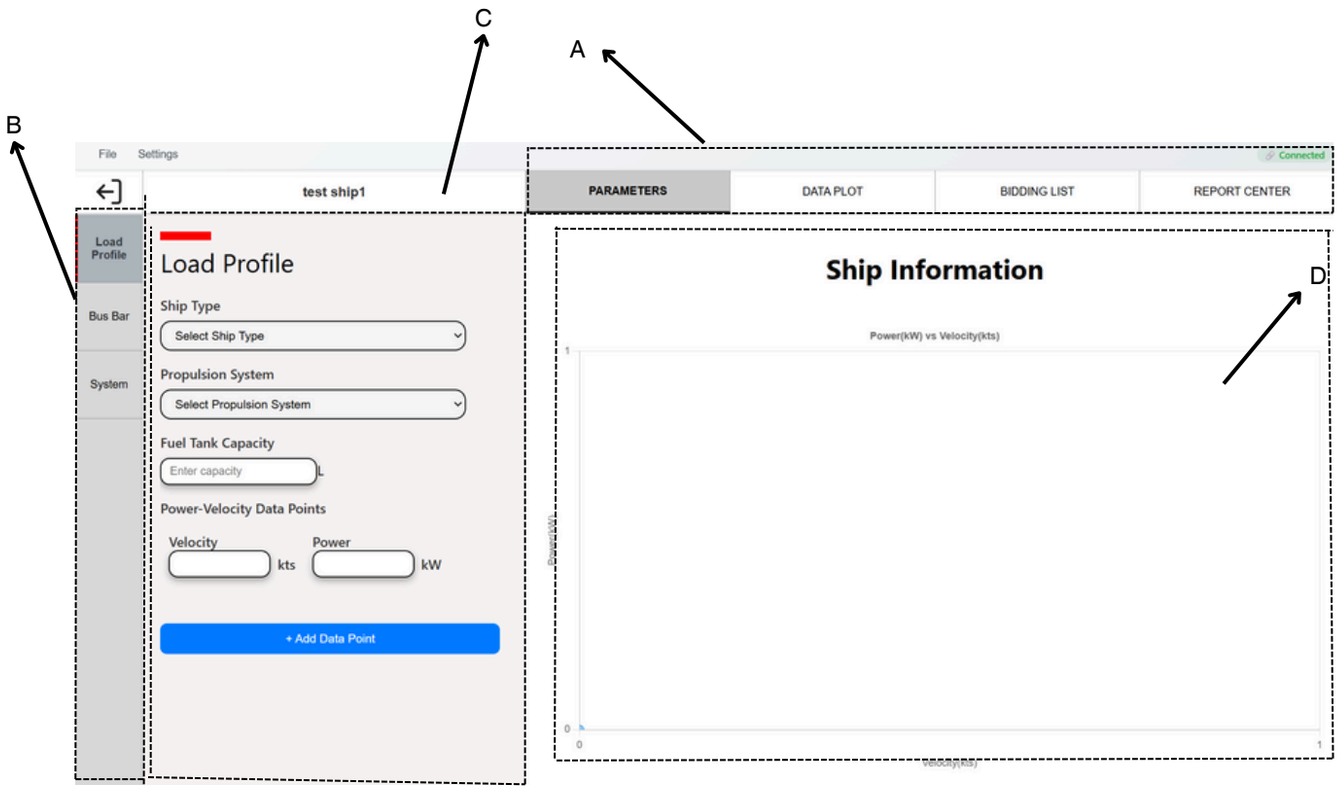
- **Core Function:** Enter the ship name, you can edit it later

B， Create Ship

- **Core Function:** Click to navigate to page 2.2.

2.2 System Home Page

Core Function： After creating a new vessel, the main interface will be displayed. The UI is divided into four distinct panels:



A，Toolbar

- **Core Function:** The toolbar panel contains tabs and toggle buttons for displaying the data plotter, bidding list, report center, and Single Line Diagram (SLD) generator.

B， Menu below the Toolbar

- **Core Function:** The menu below the toolbar changes depending on the selected tool. For example, under Parameters, the menu includes Vessel Basic Information, Bus Bar, and System.

C，Information Input Area

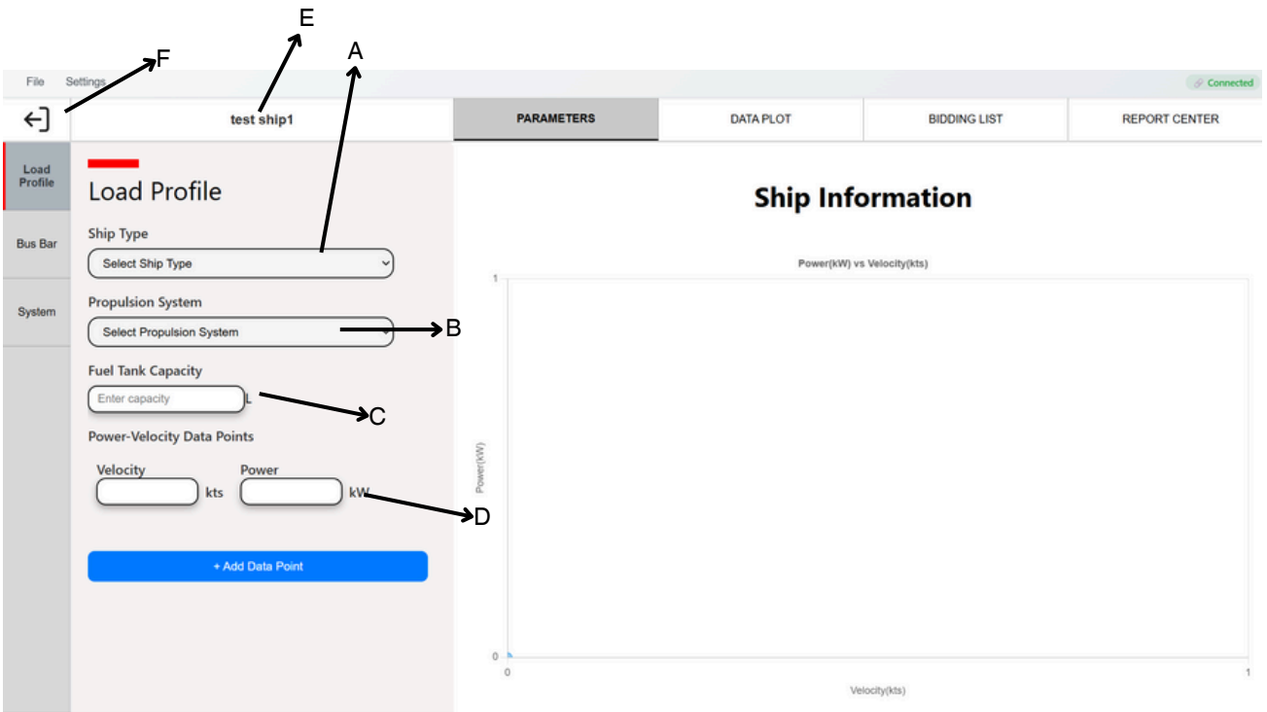
- **Core Function:** Users enter information here.

D， Information Display Area

- **Core Function:** Users can view information here.

2.3 Parameters - Ship Information

Core Function： After creating a new vessel (or entering the main interface from any other entry point), the system will open the main interface, defaulting to Parameters – Ship Information.
On this page, users will enter the required information for the vessel to be simulated, including vessel type, propulsion method, vessel resistance curve, and vessel name.



A，Ship Type

- **Core Function:** Select from seven vessel types: pilot, barge, ferry, CTV, tug boat, yacht, and fishing boat.

B， Propulsion system

- **Core Function:** Set the vessel propulsion method to one of four types: pure electric, series hybrid, parallel hybrid, or diesel.

C， Fuel Tank Capacity

- **Core Function:** Set the vessel fuel tank capacity.

D， Vessel resistance curve

- **Core Function:** Users input the vessel resistance curve by plotting points (kW vs. Velocity).

E，Ship Name

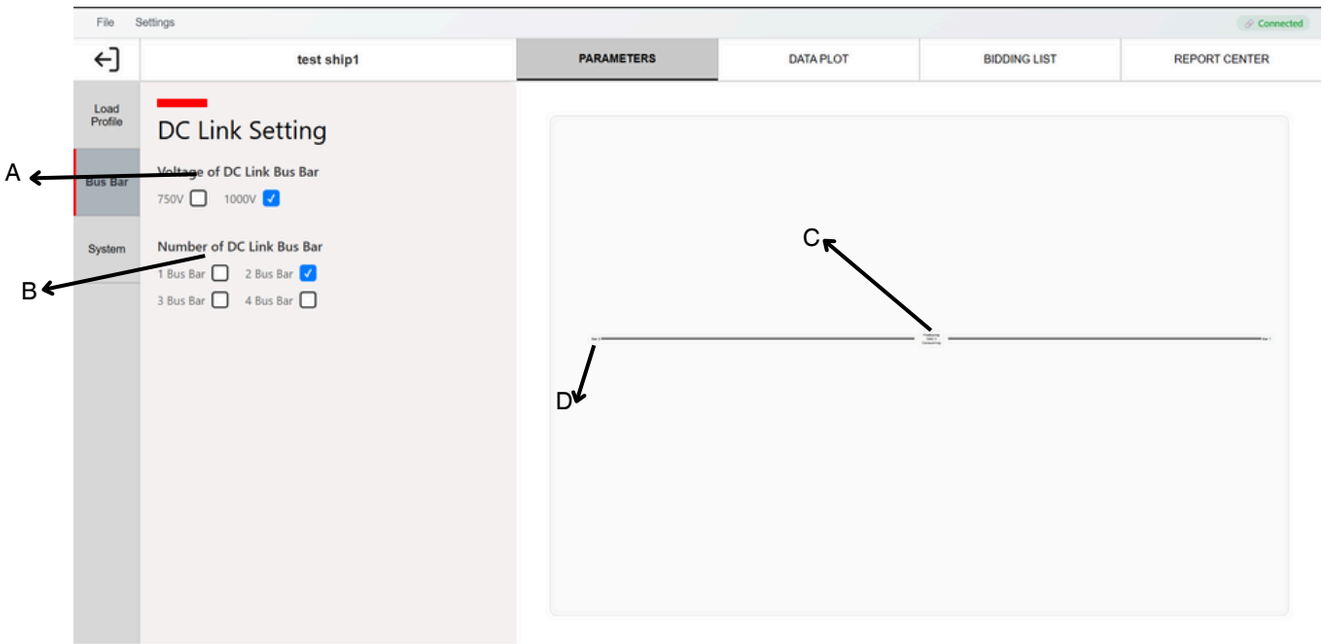
- **Core Function:** Users can enter or modify the vessel name or designation.

F， Exit button

- **Core Function:** Exit the main interface to return to the New Vessel page, saving all user-entered data.

2.4 Parameters - Bus Bar

Core Function: On this page, users can set the number of bus bars and the DC bus platform voltage—1000V for large vessels and 750V for small vessels.
The page layout places the DC-Link Settings input section on the left and a verification section on the right, where information is calculated using formulas. On the far left, users can select the DC-Link cabinet configuration and DC bus bar settings.



A， Voltage of DC Link Bus Bar

- **Core Function:** Set the DC bus voltage: typically 1000V for large vessels and 750V for small vessels.

B，Number of DC Link Bus Bar

- **Core Function:** Set the bus bar sections

C，Output bus voltage

- **Core Function:** output bus voltage (refer to Option A: 750V)

D，Number of bus bars displayed

- **Core Function:** output bus bar quantity (refer to Option B: 1 / 4).

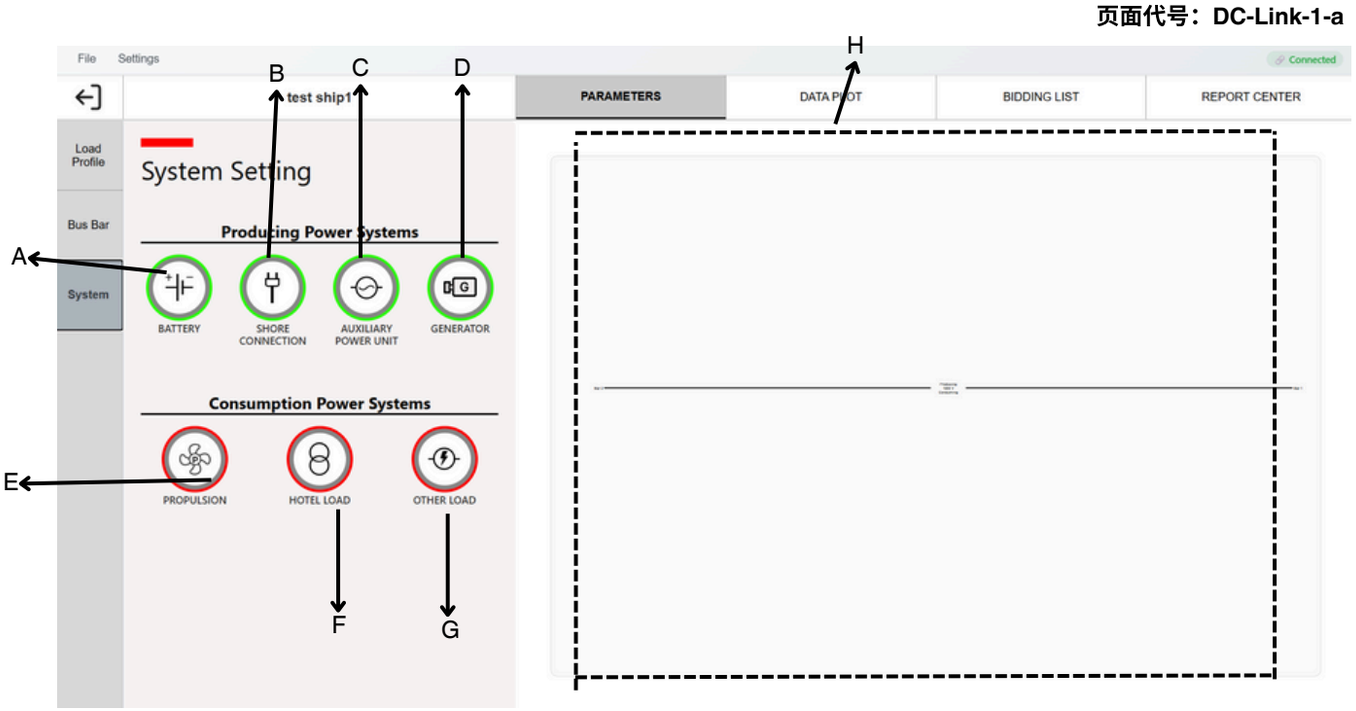
2.4 Parameters - System

Core Function: On this page, users can select the parts required for the vessel system, including Producing Power Parts and Consuming Power Parts. Special attention should be paid to the difference between the overall Producing/Consuming Power Part settings and the DC-Link Producing/Consuming Power Part settings.

- The overall Producing/Consuming Power Part settings are saved to the database and can be reused when building other vessel systems.
- The DC-Link Producing/Consuming Power Part settings are specific to the current vessel system. In other words, the DC-Link configuration defines the construction of the vessel system being edited. Only after configuring the DC-Link can the usage of each part in the vessel system be confirmed.

For example, if a user has sufficient Producing and Consuming Power Parts, configuring the DC-Link alone is enough when creating a new vessel system.
The page layout places the DC-Link Bus Bar Settings input section on the left, and the verification section on the right, which displays information via the Single Line Diagram (SLD).

页面代号：DC-Link-1-a



A，Battery

- **Core Function:** Select the battery in the Producing Power System required for this ship

B， Shore Connection

- **Core Function:** Select the shore power settings in the Producing Power System required for the ship.

C，Auxiliary Power Unit

- **Core Function:** Select the backup charging facilities in the Producing Power System required for the ship.

D， Generator

- **Core Function:** Select the generator settings in the Consuming Power System required for this ship.

E， Propulsion

- **Core Function:** Select the propulsion settings in the Consuming Power Components required for this ship.

F，Hotel Load

- **Core Function:** Select the onboard electrical facilities in the Consuming Power Components required for the ship.

G， Other Load

- **Core Function:** Select other power consuming facilities in Consuming Power Components required for the ship.

H，Workbench

- **Core Function:** Display the single-line diagram area, input from the content on the left, and output from the workbench (generate a single-line diagram).

- **Workbench area division:**

1，Display input terminal (battery, shore charging, other energy source)

2，Display output (thruster, onboard electricity, other energy consumption)

4，Display battery terminal

3，Display Auxiliary power unit

5，Display shore charging connection

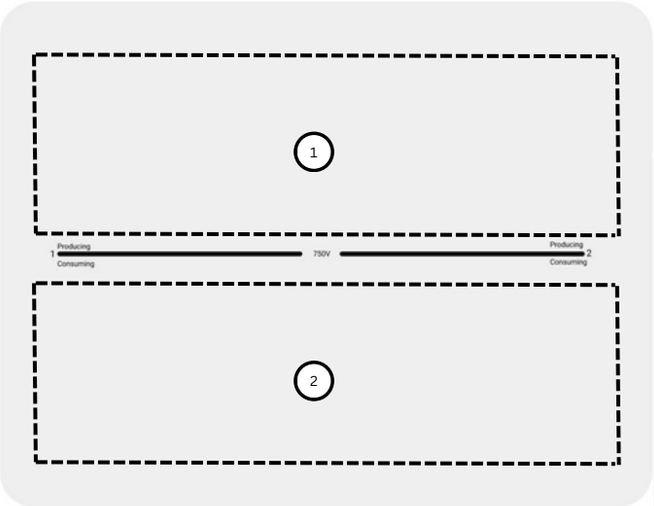
6，Display propulsion

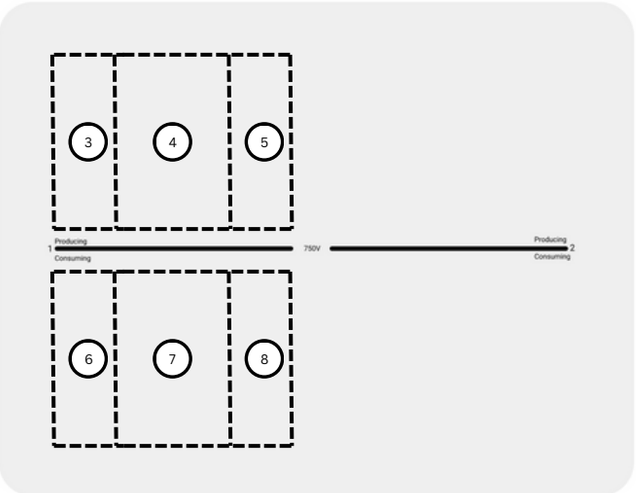
7，Display Other Load

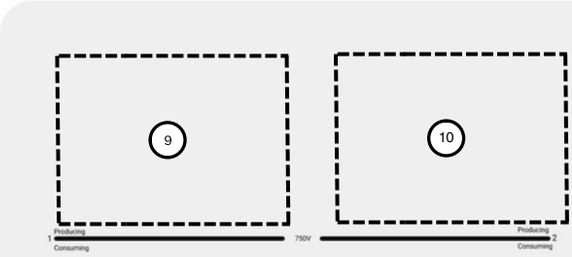
8，Display hotel load

9，busbar1

10，busbar2

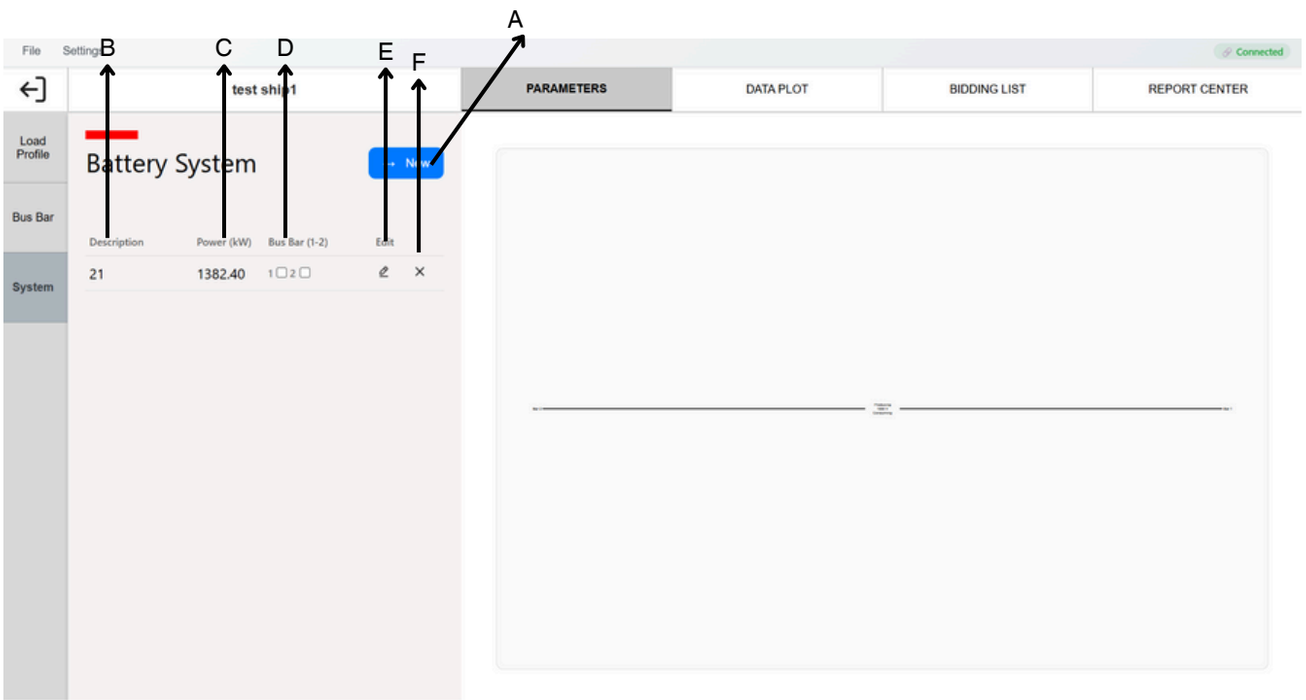






2.4.1 Parameters - System -DC Setting

Core Function: Since the principles of the DC Busbar page are relatively similar, let's take the DC Busbar Battery Metrics page as an example. On this page, users can select the specific parts and battery metrics required for the vessel system. Only after completing the settings on the DC Busbar Battery Metrics page can the battery model used in the vessel system be confirmed. For example, if the user has sufficient battery data, they only need to select the desired battery when creating a new vessel system.



A，Add new

- **Core Function:** Create a new ship group for the bus bar, such as batteries, propulsion systems, etc.

B， Group name

- **Core Function:** Display the names of all configured battery packs here (naming reference: Battery Pack-1-a).

C，Power (+/-)

- **Core Function:** Displays the power of the battery pack

D， Link

- **Core Function:** Click this button to add the selected battery pack to the vessel system. If dual bus bars are selected, the battery pack can be connected to different bus bars. Note: a single component cannot be connected to both bus bars simultaneously.

E，Edit

- **Core Function:** Click this button to set the battery pack

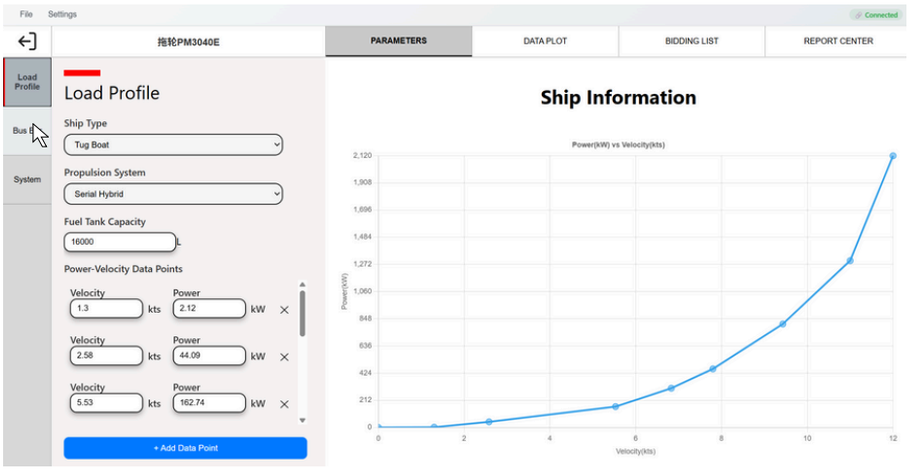
F，Remove

- **Core Function:** Click this button to delete this group

Example (8 DC-Link Setting)

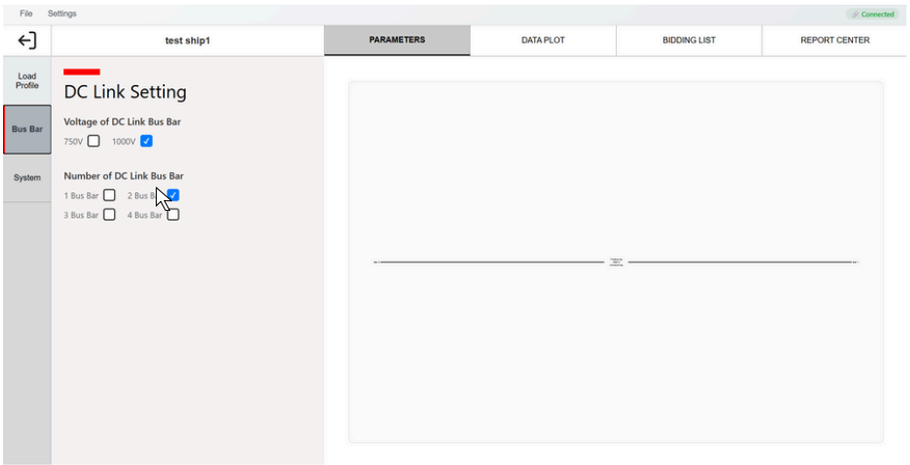
Step1

After the user completes the Load Profile setup, move the cursor over the Bus Bar.



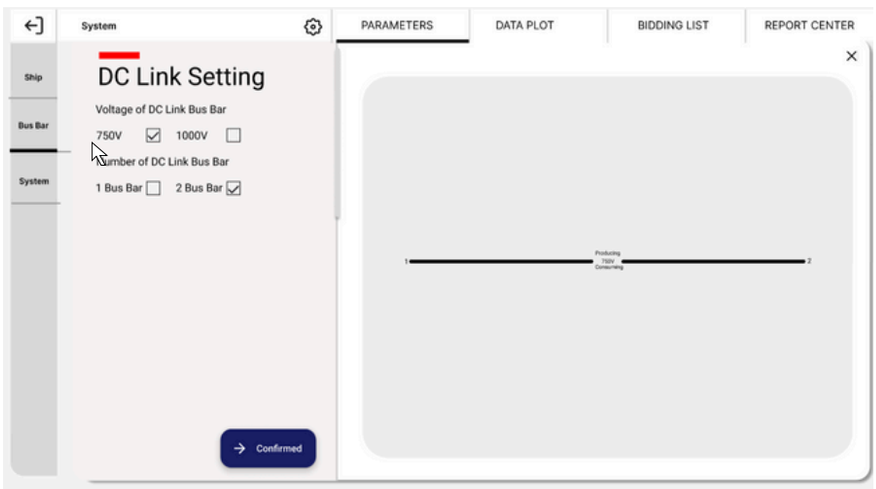
Step2

The user clicks on the Bus Bar to enter its settings and prepare to select parameters.



Step3

After selecting the bus bar specifications, the user moves the cursor to System.

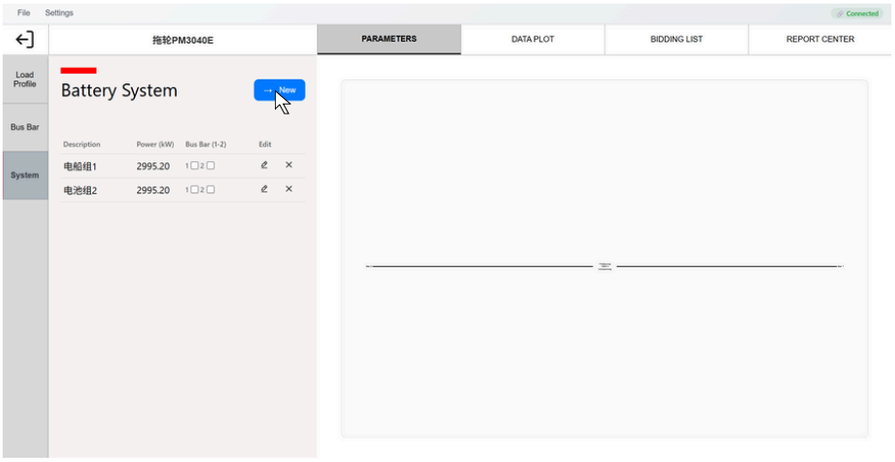


Step4

The user clicks to enter the System settings, then moves the cursor to Battery settings.

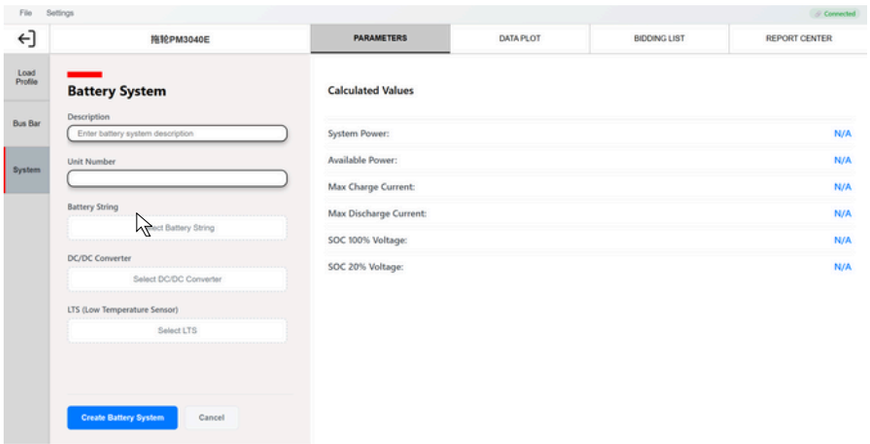
Step5

The user clicks to enter Battery settings. To add a new battery system, the user moves the cursor to New.



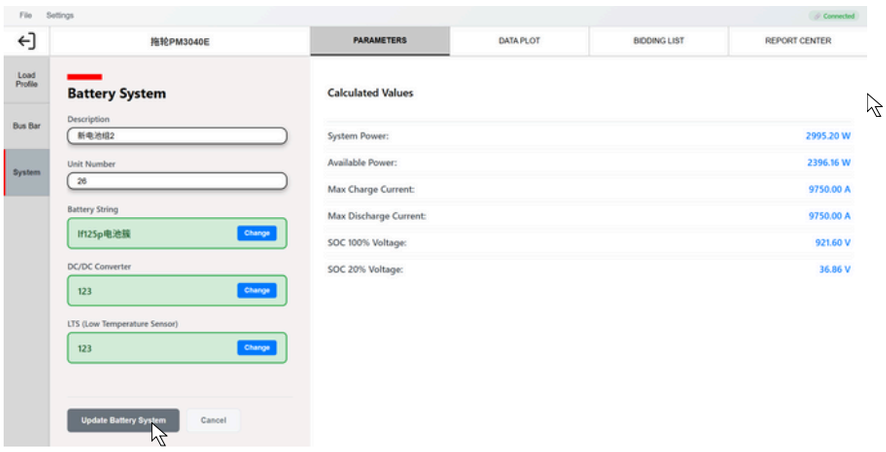
Step6

The user clicks New to enter the battery pack settings and fills in the required data.



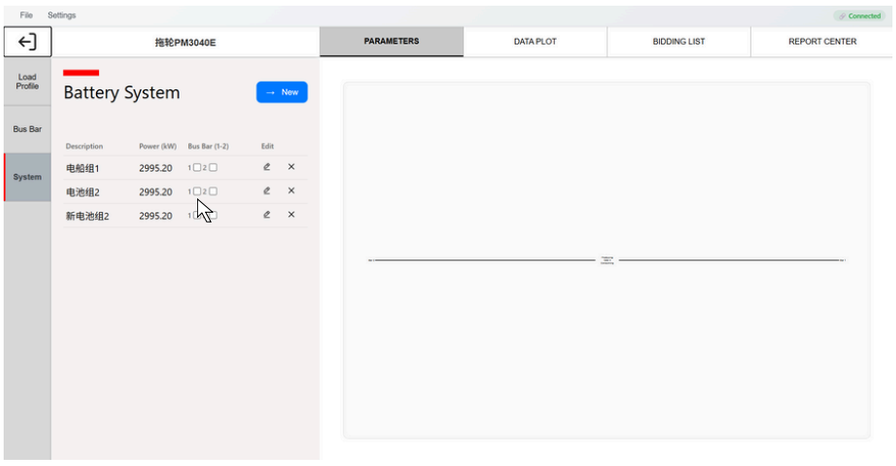
Step7

After entering the data, the user moves the cursor to Create Battery System.



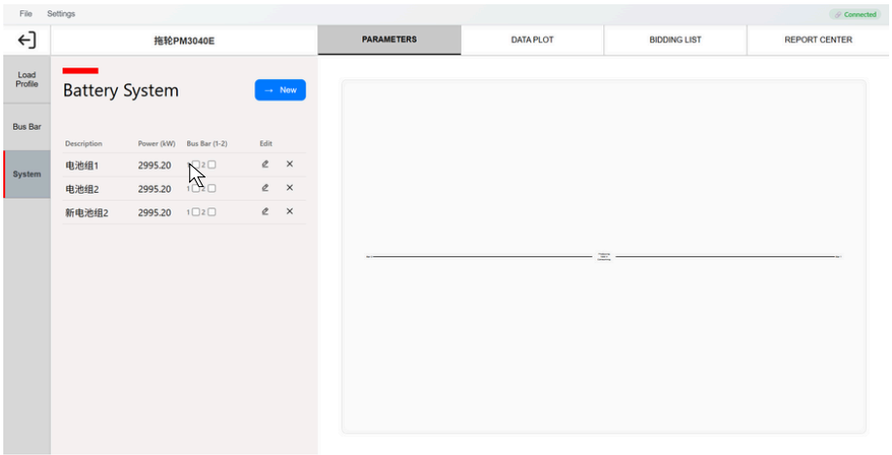
Step8

The user clicks Confirm and sees that the newly created Battery Pack 2 appears in the list. The user is now ready to connect the battery packs to the bus bar.



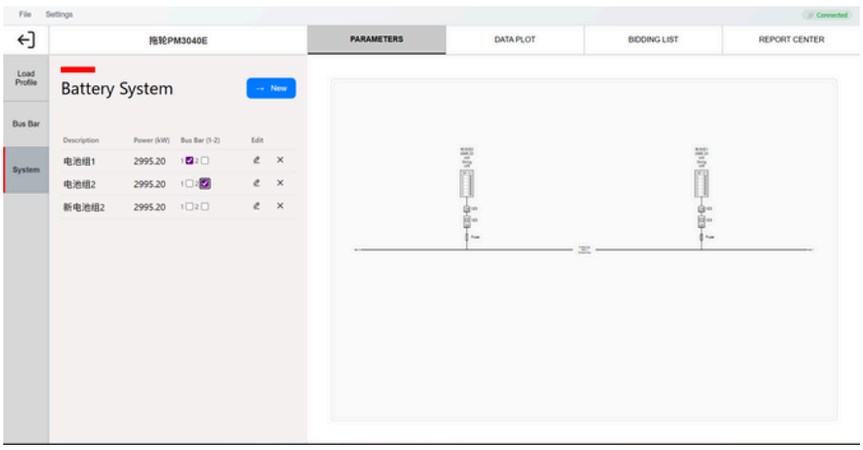
Step9

The user decides to use Battery Pack 1 and Battery Pack 2 in this vessel system, connecting them to the first and second bus bars. The user moves the cursor to the Bar1 button of Battery Pack 1, then clicks the Battery Pack 2 button followed by Bar2.



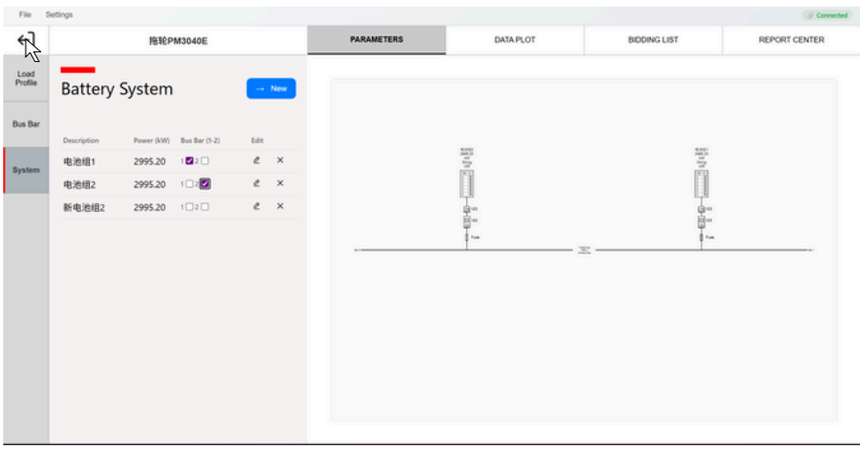
Step10

The user clicks the Bar1 and Bar2 buttons. The Single Line Diagram (SLD) area on the right now shows Battery Pack 1 connected to Bus Bar 1 and Battery Pack 2 connected to Bus Bar 2.



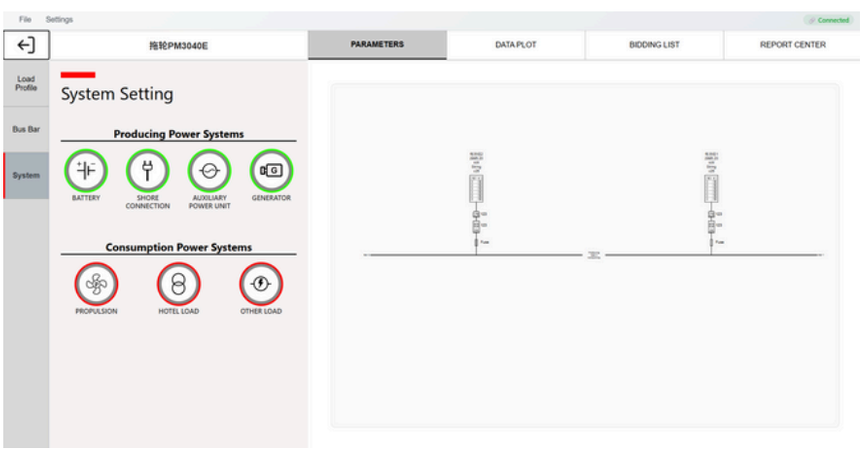
Step11

After setting up the batteries, the user decides to exit the battery settings page and moves the cursor to Back.



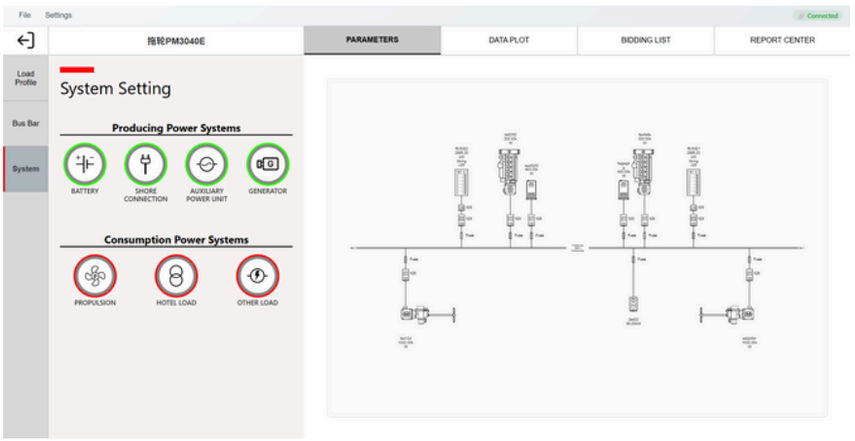
Step12

The user clicks to return to the System Settings page and configures other components, repeating steps 5–11.

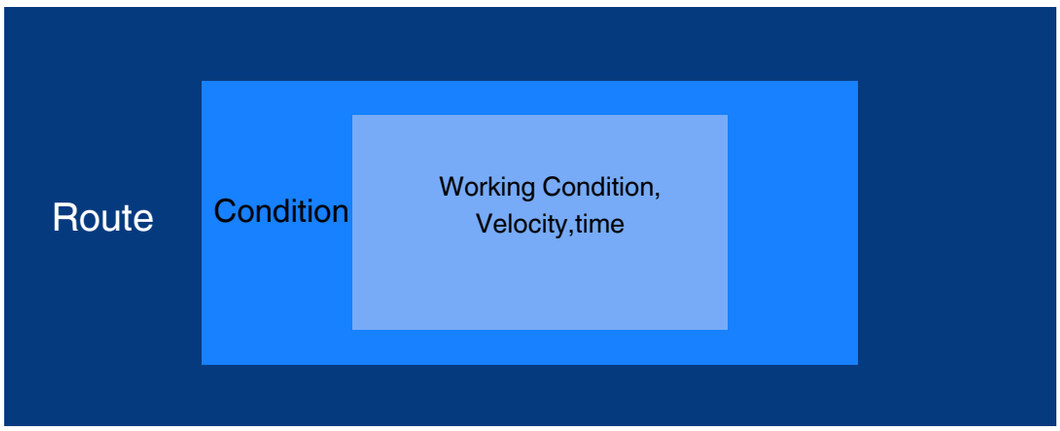


Step13

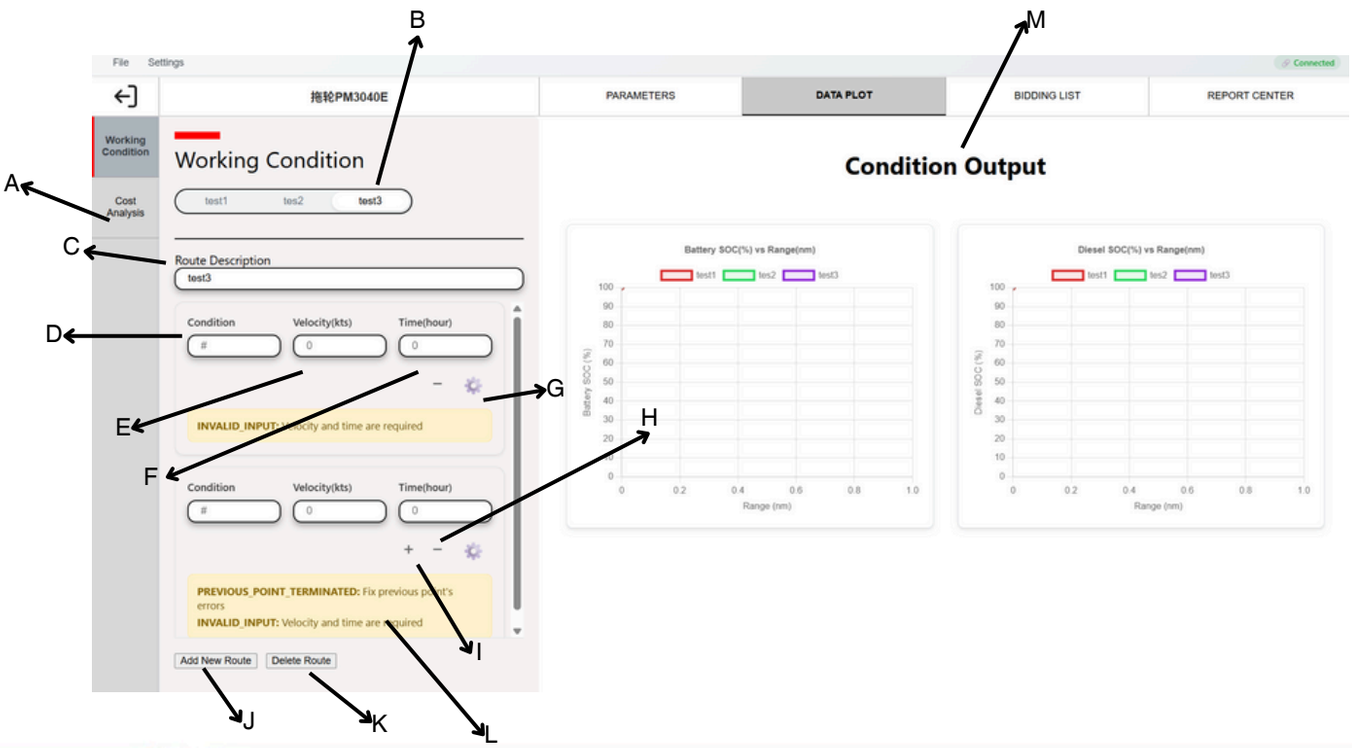
Once all settings are completed, the resulting configuration will be displayed on the right side.



3.1 Working Condition



Core Function: After completing the vessel system setup, the user can access the Data Plot main interface. The Data Plot function is primarily used to analyze vessel operating conditions, with results displayed as different curves.
On this interface, users set the vessel's routes (multiple routes can be configured). Each route includes operating conditions: condition description, vessel speed under this condition, operating time, and power distribution.



A，Cost Analysis

- **Core Function:** Cost Analysis Interface: clicking this button will navigate the page to Cost Analysis.

B， Route Selection

- **Core Function:** Users can switch routes here.

C， Route Description

- **Core Function:** Users enter a textual description of the vessel route here, e.g., Shanghai–Wuhan.

D， Condition

- **Core Function:** Users enter a textual description of the vessel operating condition here, e.g., Yangshan Port (Departure).

E， Velocity

- **Core Function:** Users can enter the vessel speed under the current operating condition here.

F，Time

- **Core Function:** Users can enter the vessel operating time for the current condition here.

G，More Setting

- **Core Function:** Users can add additional settings for the vessel under the current operating condition, such as power distribution. Clicking this button will navigate the user to 3.2.

H，Condition remove button

- **Core Function:** Used to delete operating condition parameters. Clicking this button will remove the condition and recalculate the curves.

I，Condition Add button

- **Core Function:** Users can add a new operating condition here.

J，Route Add button

- **Core Function:** Users can add a new route here. A corresponding curve will also appear on the right, allowing comparison between different routes.

K， Route remove button

- **Core Function:** Used to delete a route. Clicking this button will remove the route and its corresponding curve (at least one route must remain).

L, Error reporting function

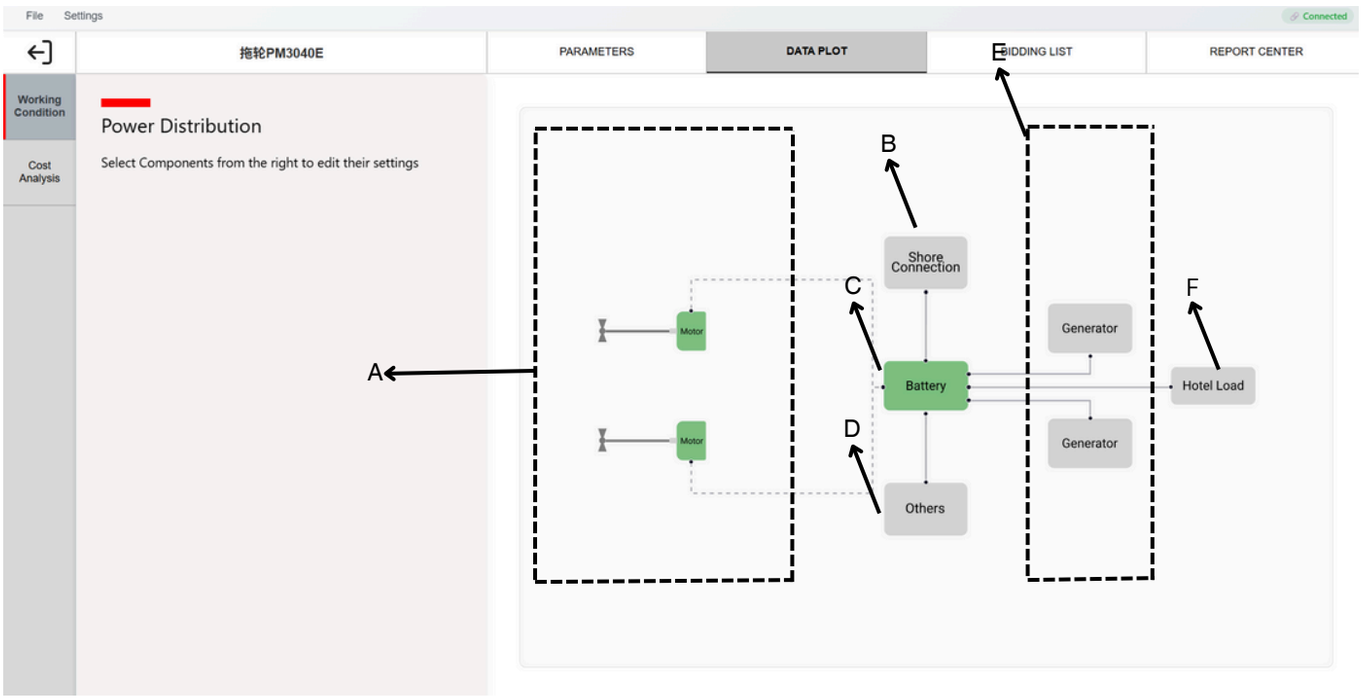
- **Core Function:** If the route requirements cannot be met with the current vessel system, the system will intelligently notify the user of the specific error.

M, Condition output

- **Core Function:** This section generates curves, with the curve type determined by the Output Type.

3.2 Power Distribution Setting

Core Function: For ships with different propulsion systems, power distribution is carried out under the current operating condition. The Output area will generate a power distribution diagram based on the previously configured ship system. All generated components are buttons, which can be pressed to enter different setting interfaces.

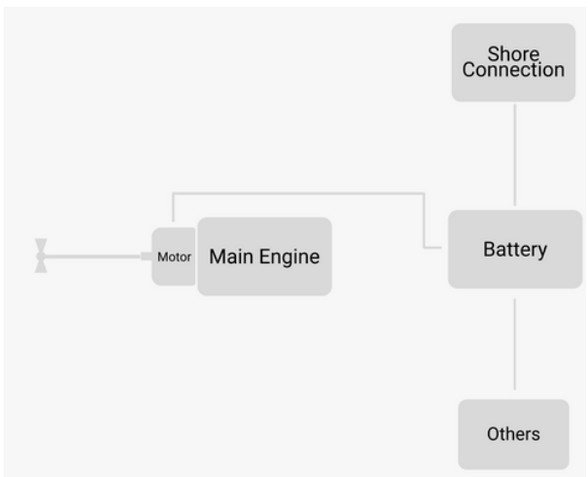


A，Propulsion System Section

- **Core Function:** The user can set the propeller/thruster mode here.
- **Quantity Generation Conditions**：The quantity is determined based on the number of propulsion units set by the user in System Integration (for parallel hybrid configurations).
- **Power Distribution Percentage**： The user can modify the default power distribution values. The total allocation across all propulsion units must equal 100%.

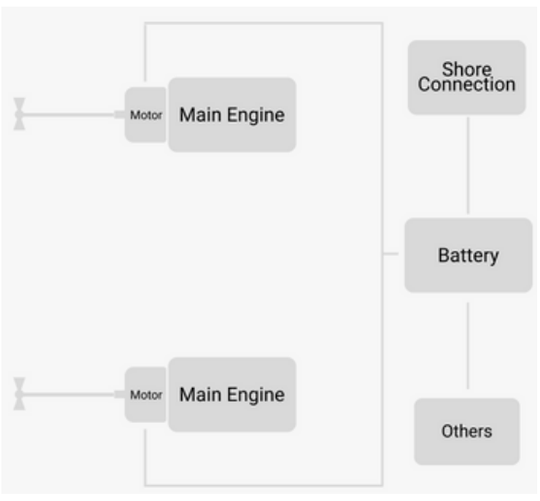
Number is 1

The default power distribution for a single propulsion unit is 100%.



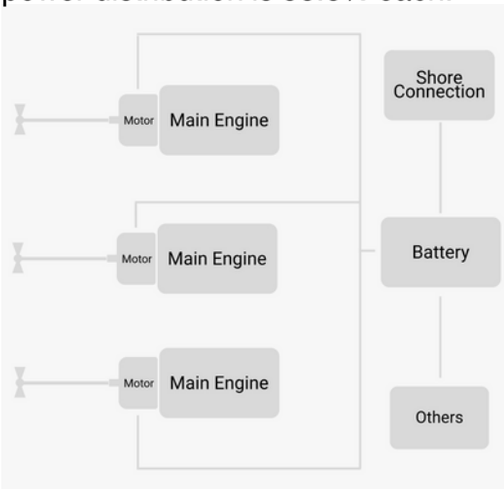
Number is 2

For two propulsion units, the default power distribution is 50% each.



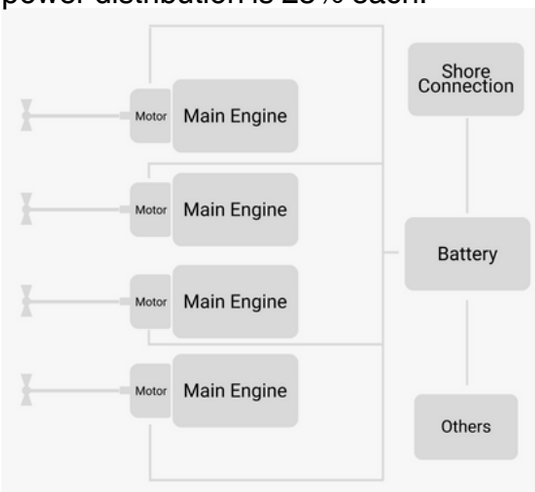
Number is 3

For three propulsion units, the default power distribution is 33.3% each.



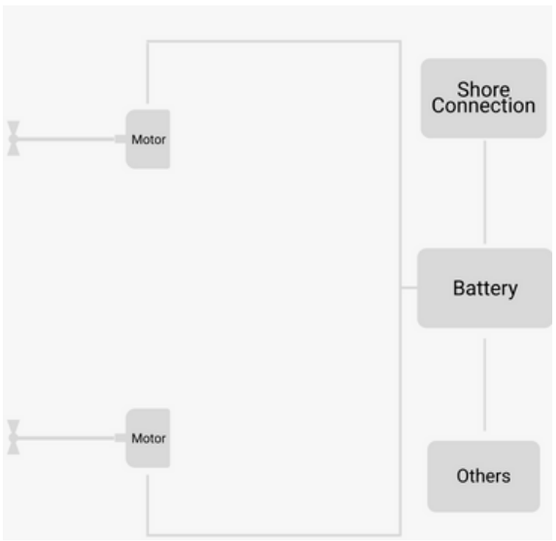
Number is 4

For four propulsion units, the default power distribution is 25% each.

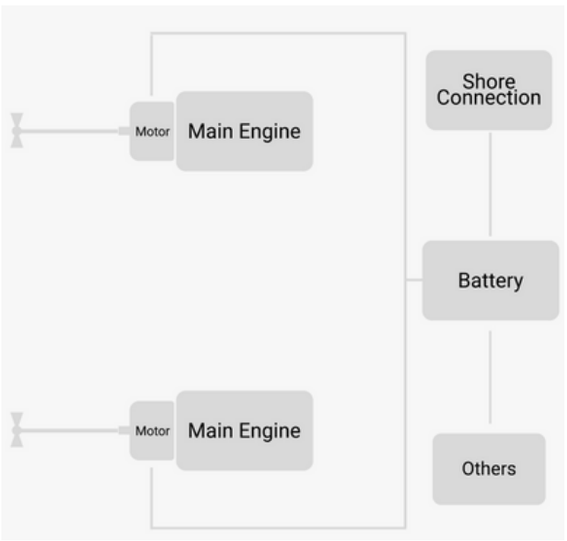


- **Conditions for Generating Propulsion Types**：The propulsion method is determined based on the user's selection in System Integration (when the number of units is 2).

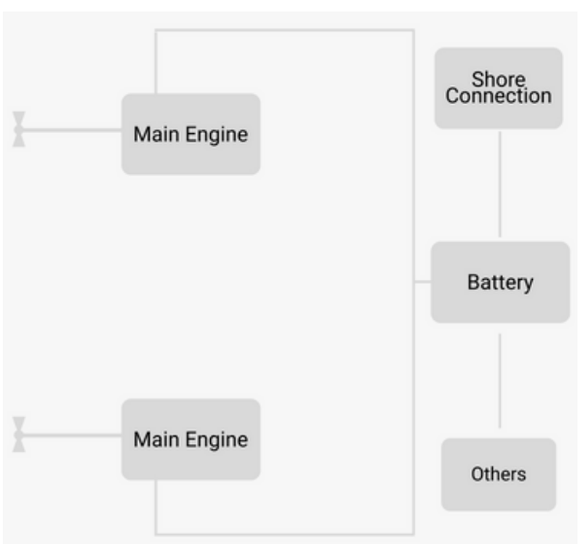
Condition: A



Condition:B



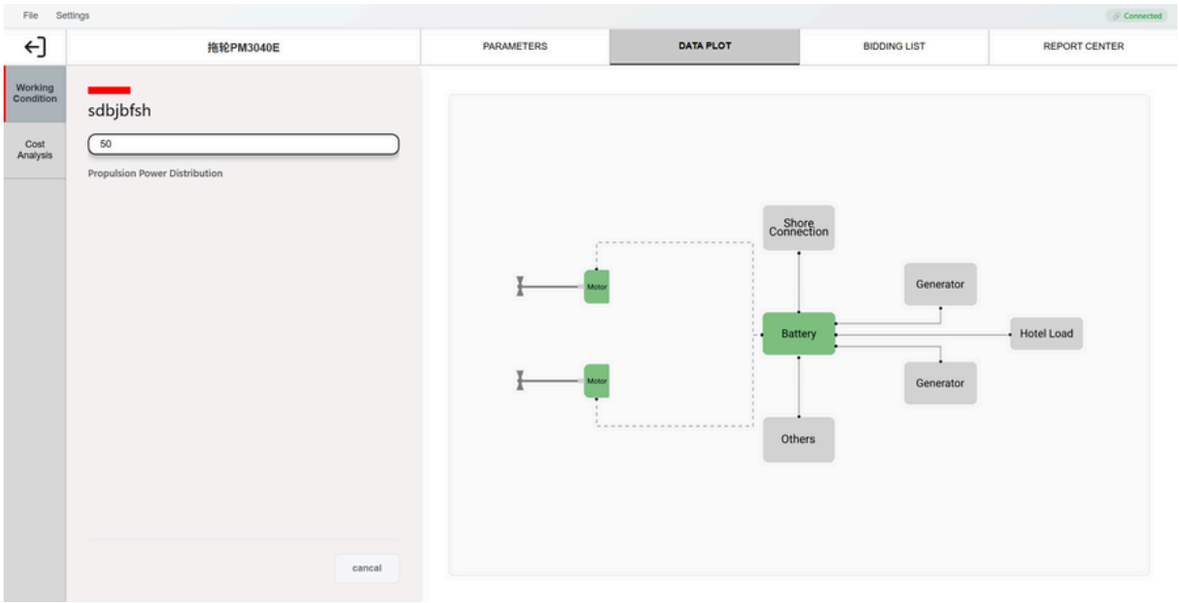
Condition: C



- **Input section：** After clicking the propulsion unit in the UI, the left side will display the data input fields corresponding to that propulsion unit type.

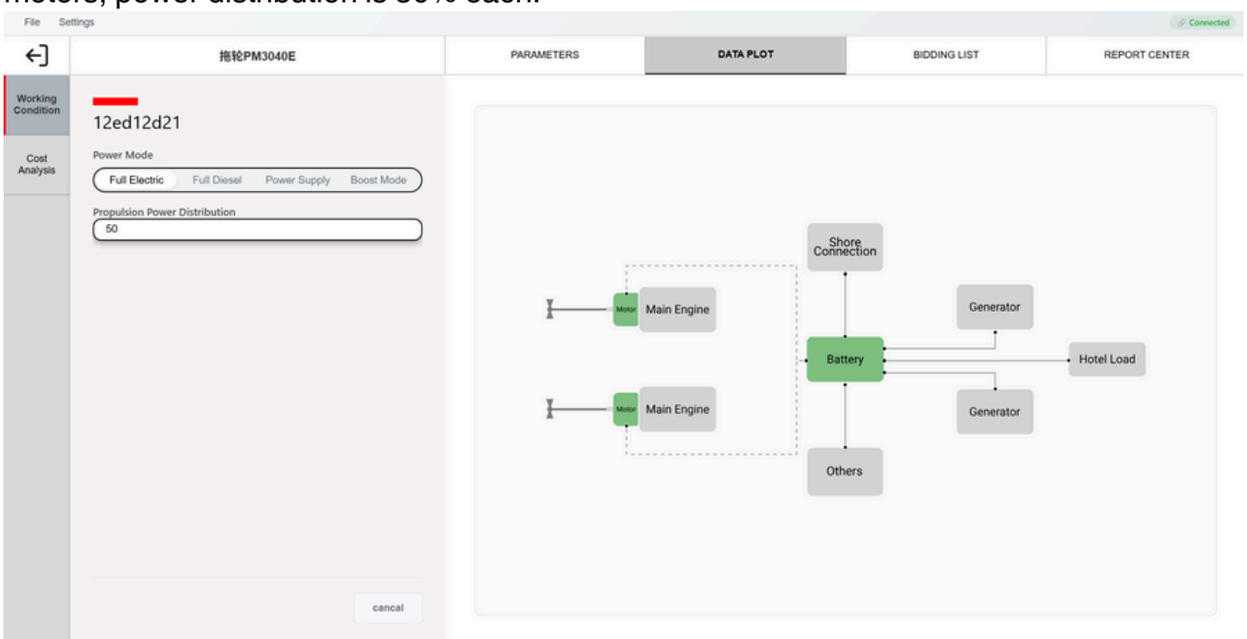
If Case A (pure electric system), after clicking the motor:：

Core Function： Motor turns green; green line shows current direction. With two motors, power is distributed 50% each.



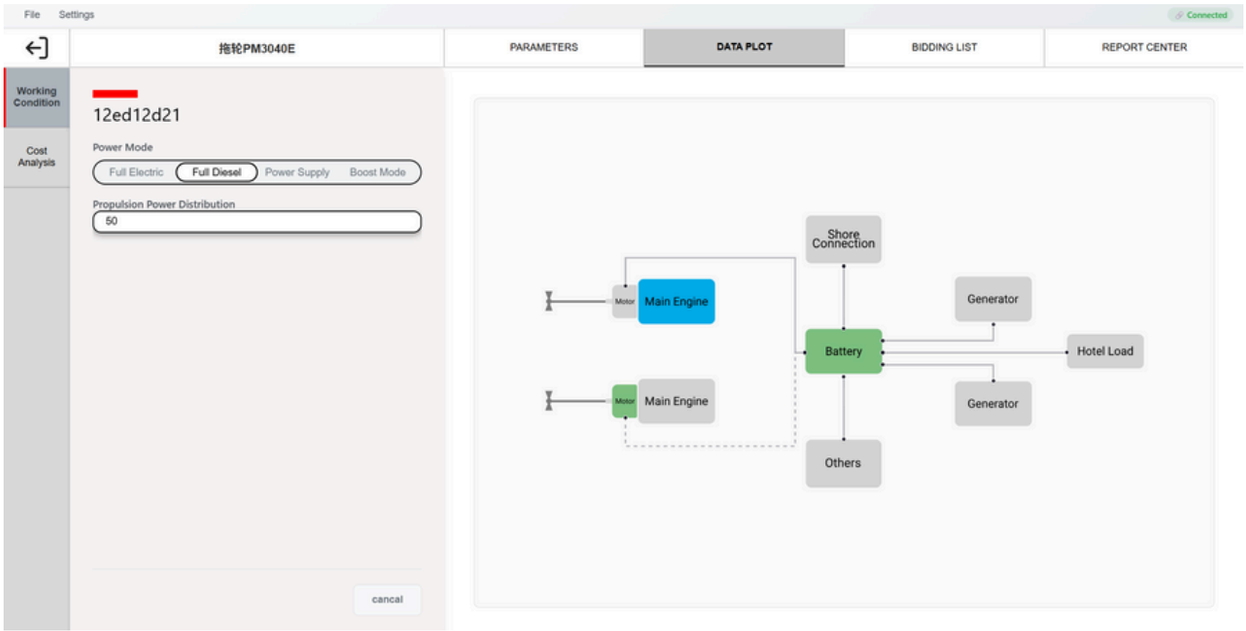
If Case B (parallel hybrid system with switchable modes), after clicking the motor or main engine：

Mode1： Battery-powered motor propulsion mode: The main engine (diesel) is off, and the battery-powered motor handles propulsion. All shipboard electrical loads are supplied by the battery. The motor is on by default.
Core Function： The main engine is gray, indicating it is off. The motor turns green, indicating it is on, and the green line shows current flowing toward the motor. With two motors, power distribution is 50% each.



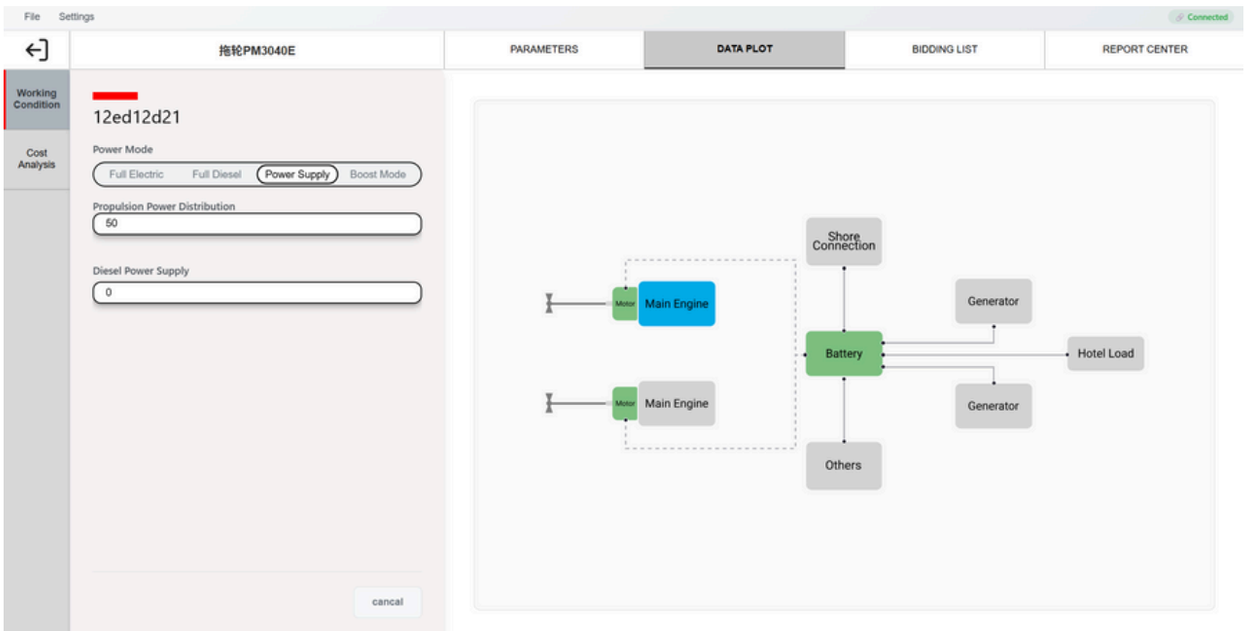
Mode 2： Diesel engine propulsion mode: The motor is off, PTI is unloaded, and the main engine (diesel) handles propulsion. All shipboard electrical loads are supplied by the battery. The diesel engine is on by default.

Core Function： The main engine is blue, indicating it is on. The motors are gray, indicating they are off, and the gray lines show no current flow. With two motors, power distribution is 50% each.



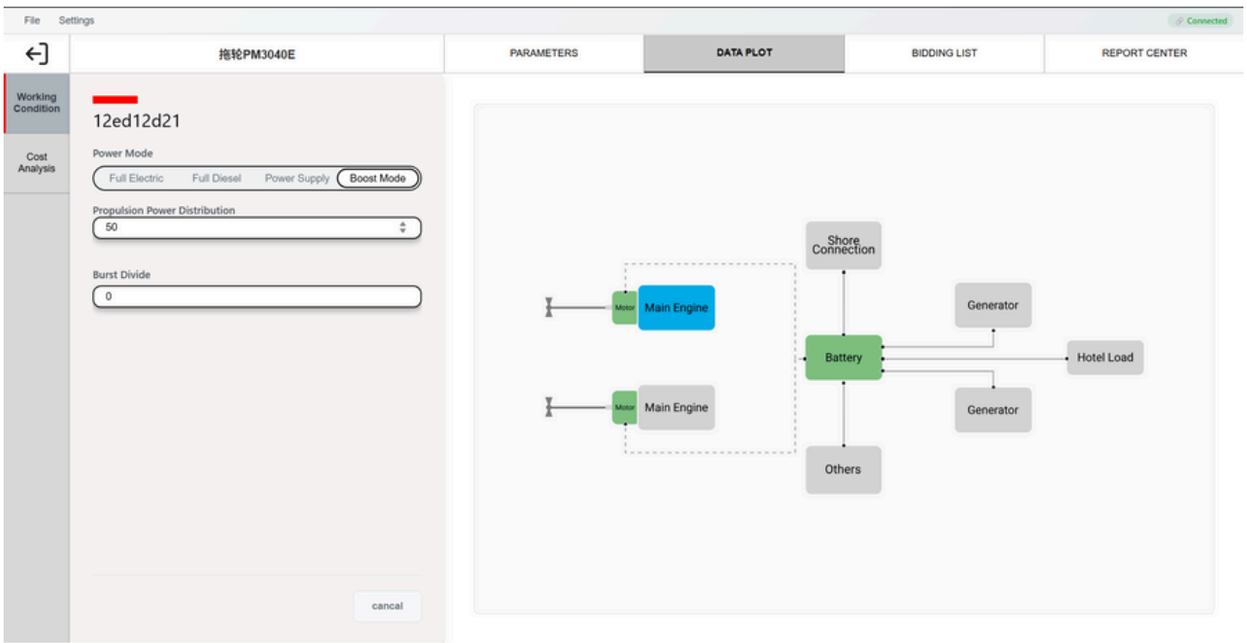
Mode3: Generator mode: The main engine (diesel) runs, and the motor operates as a generator. The diesel engine provides propulsion, while the generator charges the battery and supplies power to all shipboard electrical loads.

Core Function： The main engine is blue, indicating it is on. The motors are green, indicating they are on, and the green line shows current flowing toward the battery. The diesel engine's output percentage can be set. With two motors, power distribution is 50% each.



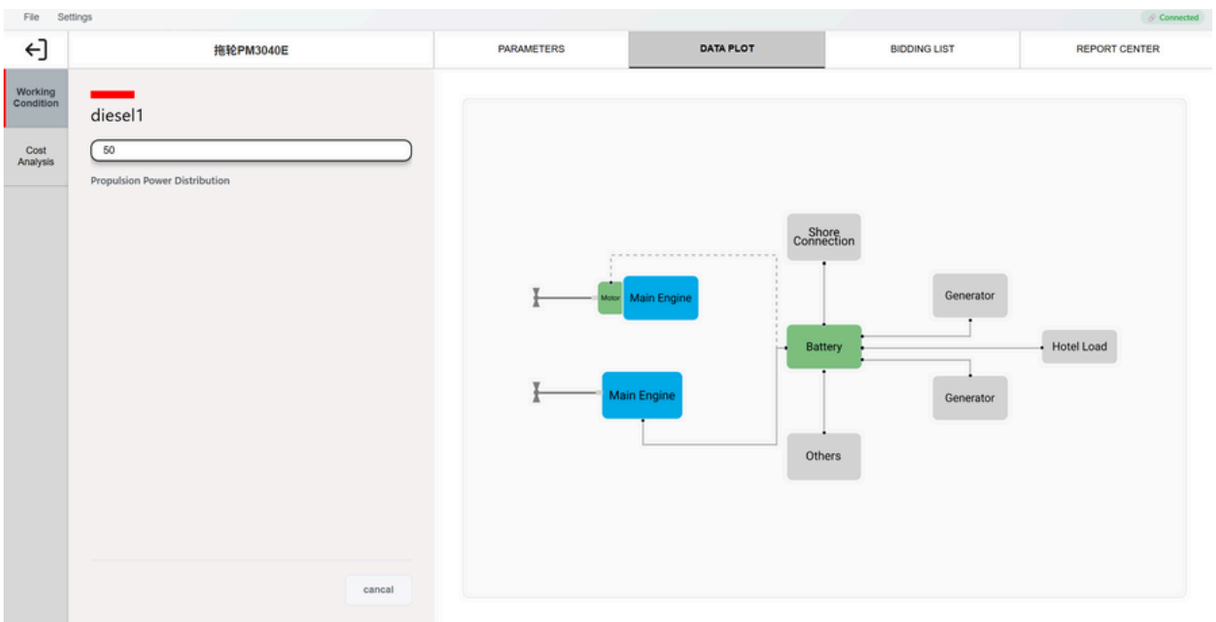
Mode4： Boost mode: All shipboard electrical loads are supplied by the battery. The ship operates at high speed, with both the main engine (diesel) and motors working simultaneously to provide propulsion.

Core Function： The main engine is blue, indicating it is on. The motors are green, and the green line shows current flowing toward the motors. In Burst Divide mode, the motor's contribution to propulsion can be set as a percentage. With two motors, power distribution is 50% each.



If Case C (diesel engine system), after clicking the main engine:

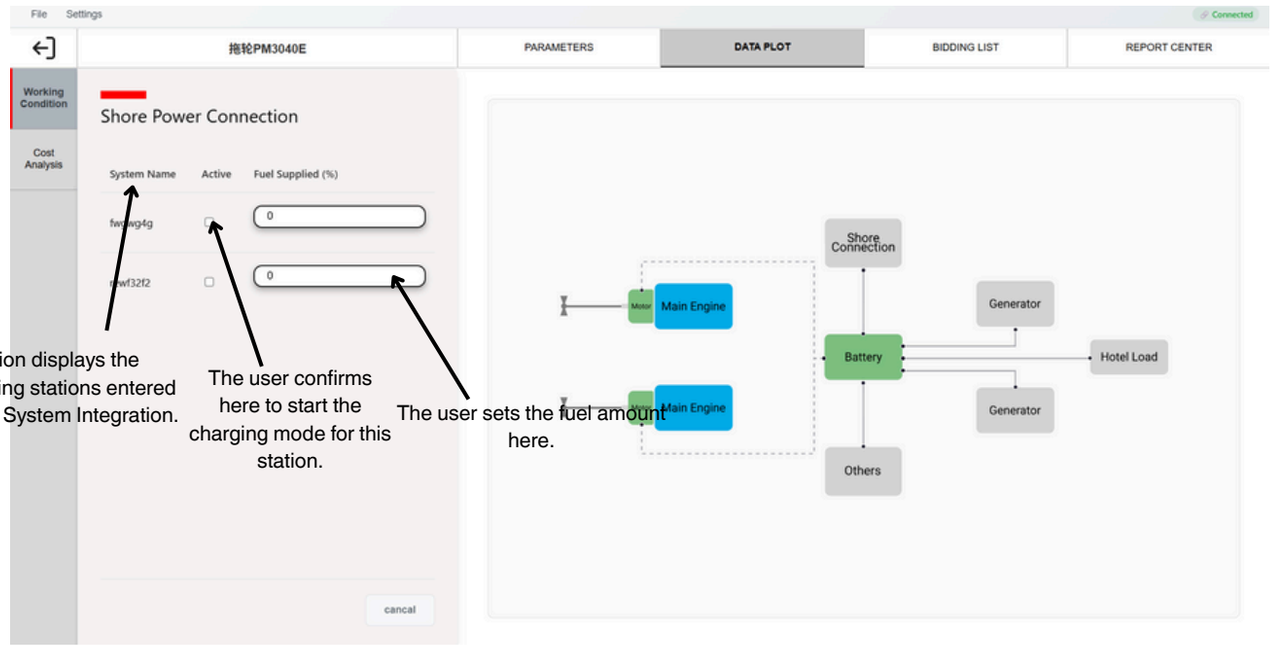
UI display：The main engine turns blue, and the gray line indicates no current flow.



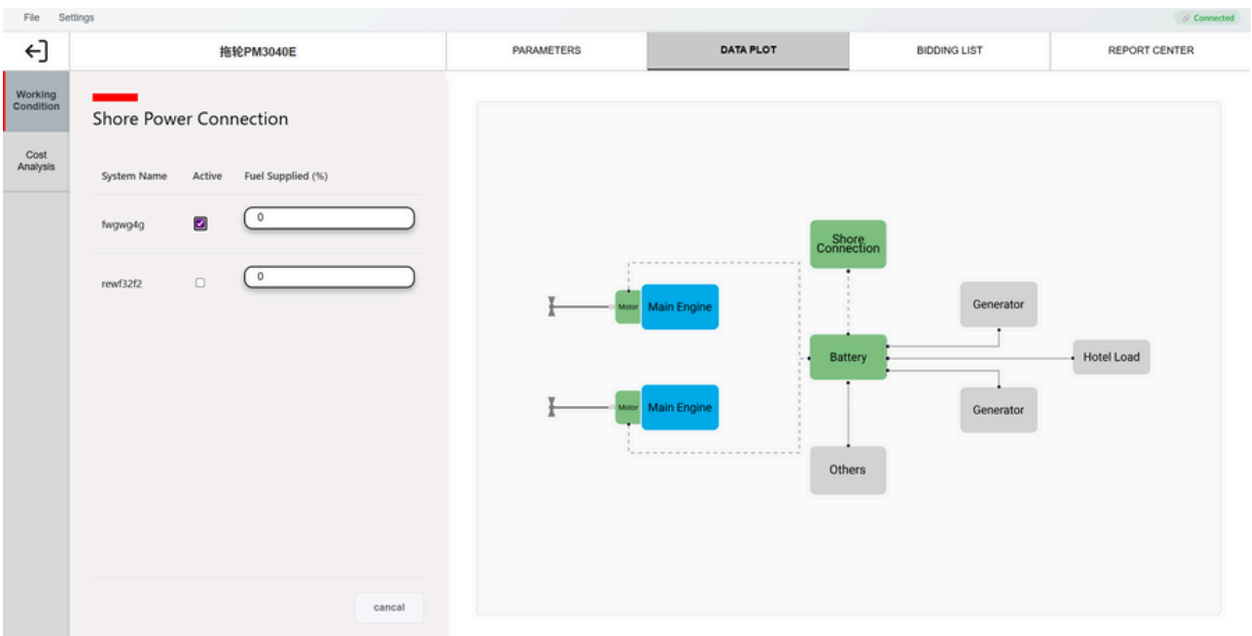
B，Shore Charger Generation Block

- **Core Function:** The user can set the shore charger here (charging or non-charging mode).

User Click shore connection：



- **UI Display：** If a Shore Power Connection is linked to the battery, it turns green to indicate it is active.

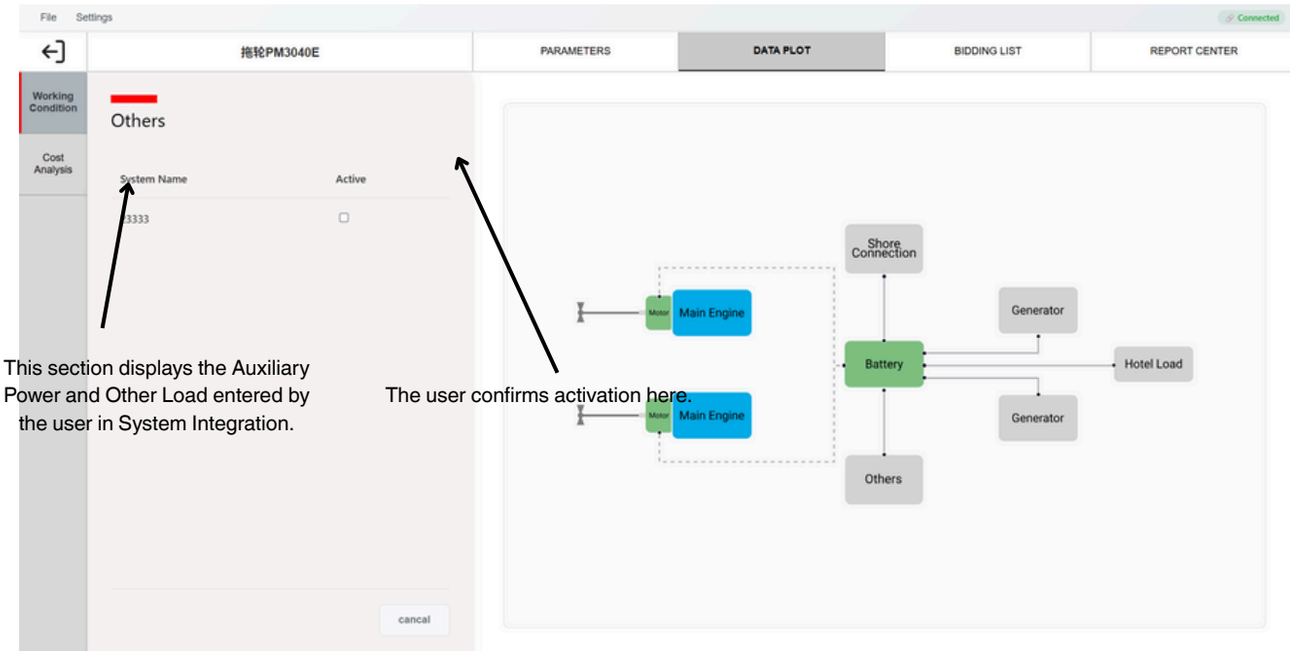


C，Battery Generation Block

- **Core Function：** For display purposes only, with no interactive functionality. The UI appears permanently green.

D，Other Generation Blocks

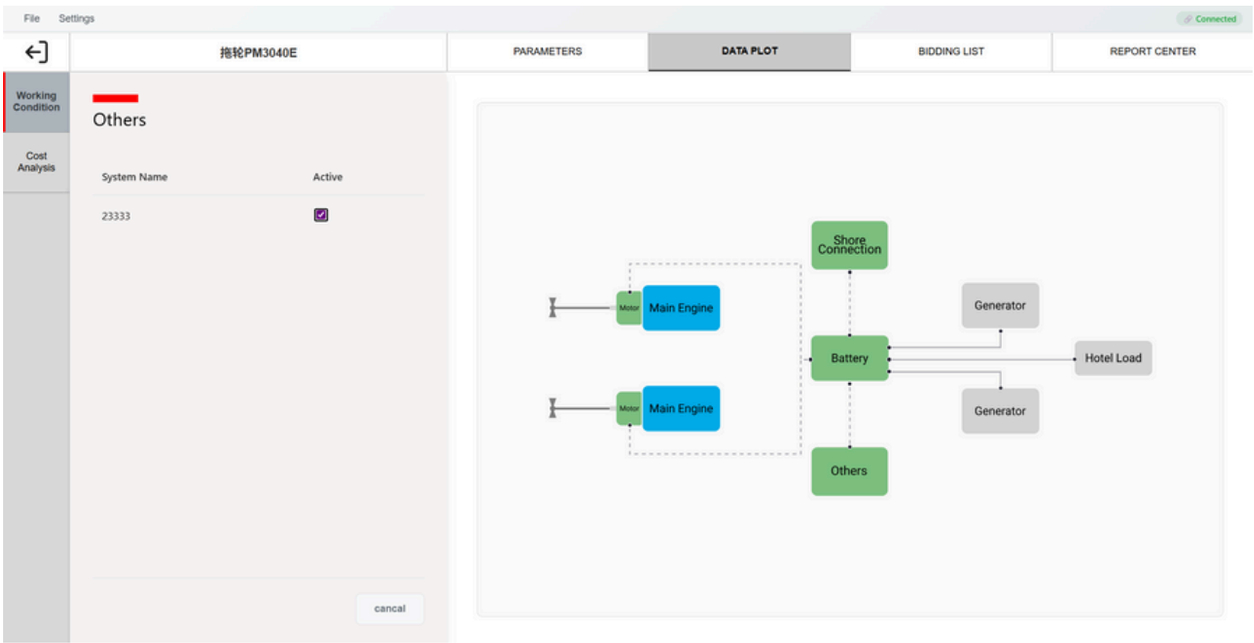
- **Core Function:** The user can set ‘Other’ here, which includes the Auxiliary Power Unit and Other Load configured in System Integration.



This section displays the Auxiliary Power and Other Load entered by the user in System Integration.

The user confirms activation here.

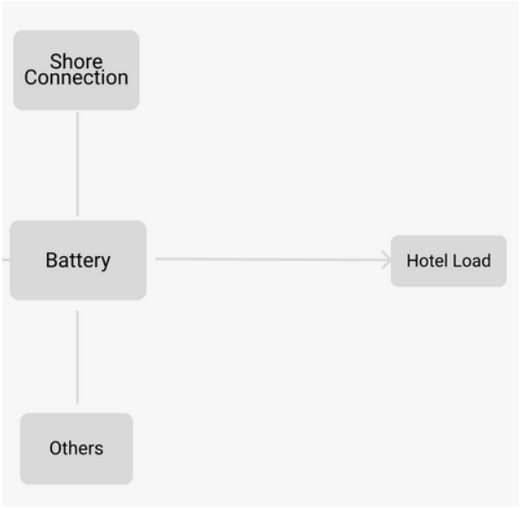
- **UI Display：** If ‘Other’ is connected to the battery, it turns green to indicate it is active. If the kWh of Other Load is greater than Auxiliary Power, the green line shows current flowing toward Other; otherwise, the direction is reversed.



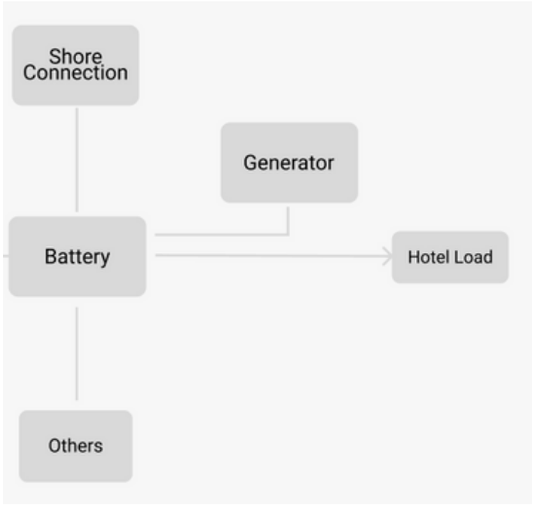
E，Generator Section

- **Core Function:** The user can set the generator power distribution here.
- **Quantity Generation Conditions**：Determined by the number of generators set by the user in System Integration.

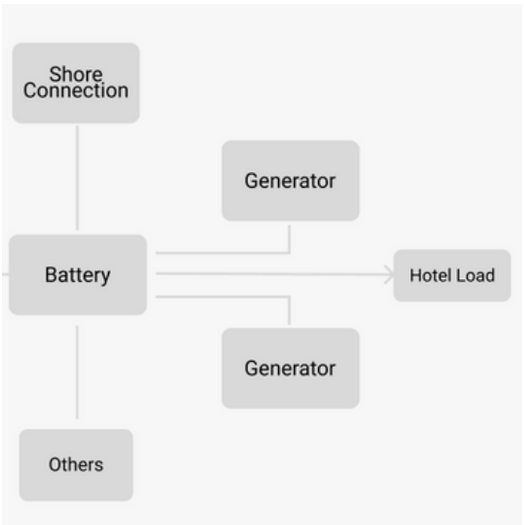
Number is 0



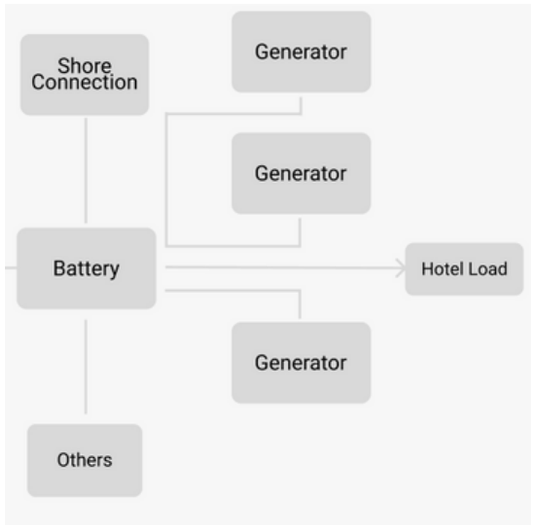
Number is 1



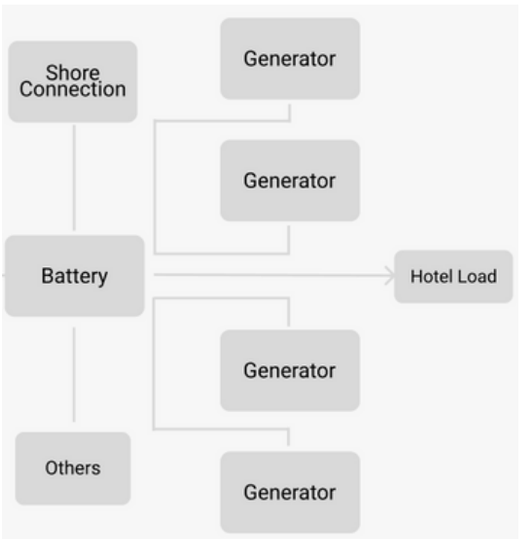
Number is 2



Number is 3



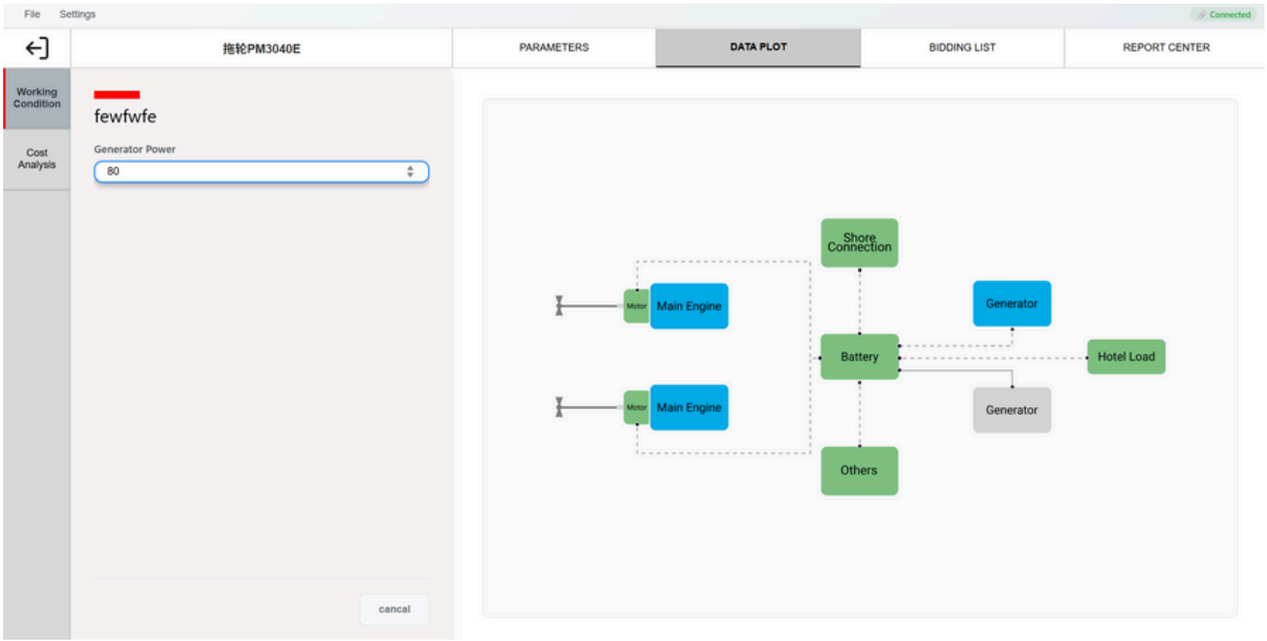
Number is 4



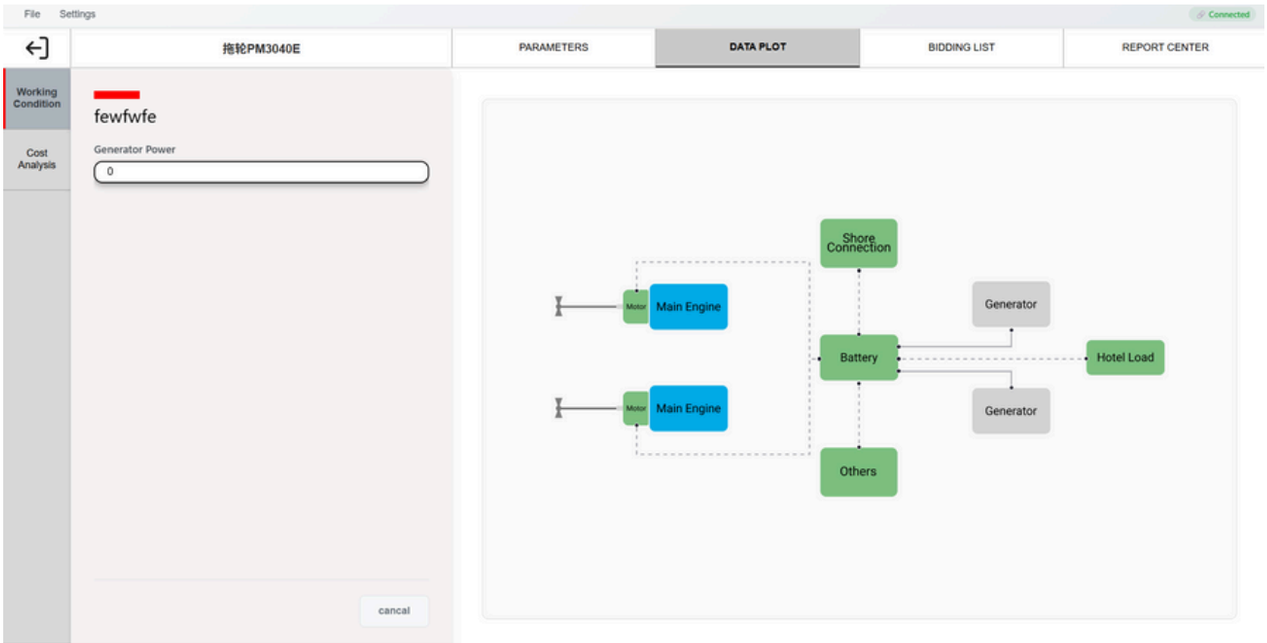
- **Input Section**：After clicking the propulsion unit in the UI, the generator data input fields appear on the left (in the figure below, the quantity is 2).

The user activates the generator by adjusting its power output.

UI Display：The generator is blue, indicating it is on. The blue line shows current flowing toward the battery. The user sets the generator's output percentage to activate it.



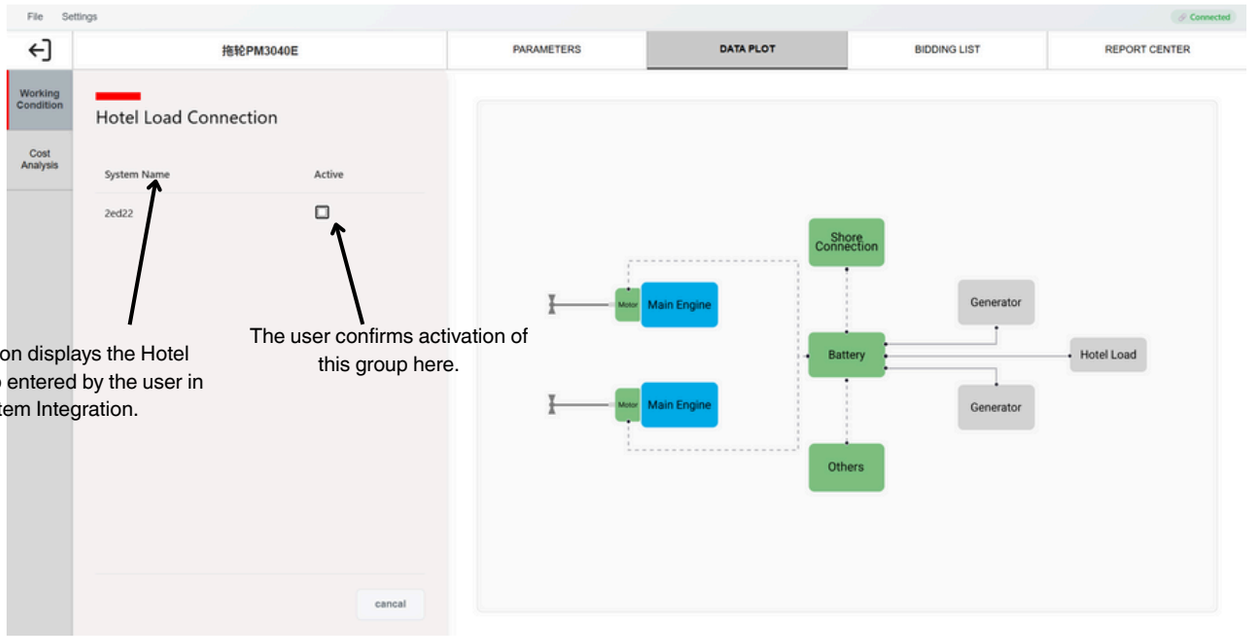
UI Display：The generator is gray, indicating it is off. The gray line shows no current flow.



F，Hotel Load Section

- **Core Function:** The user can set the Hotel Load here.

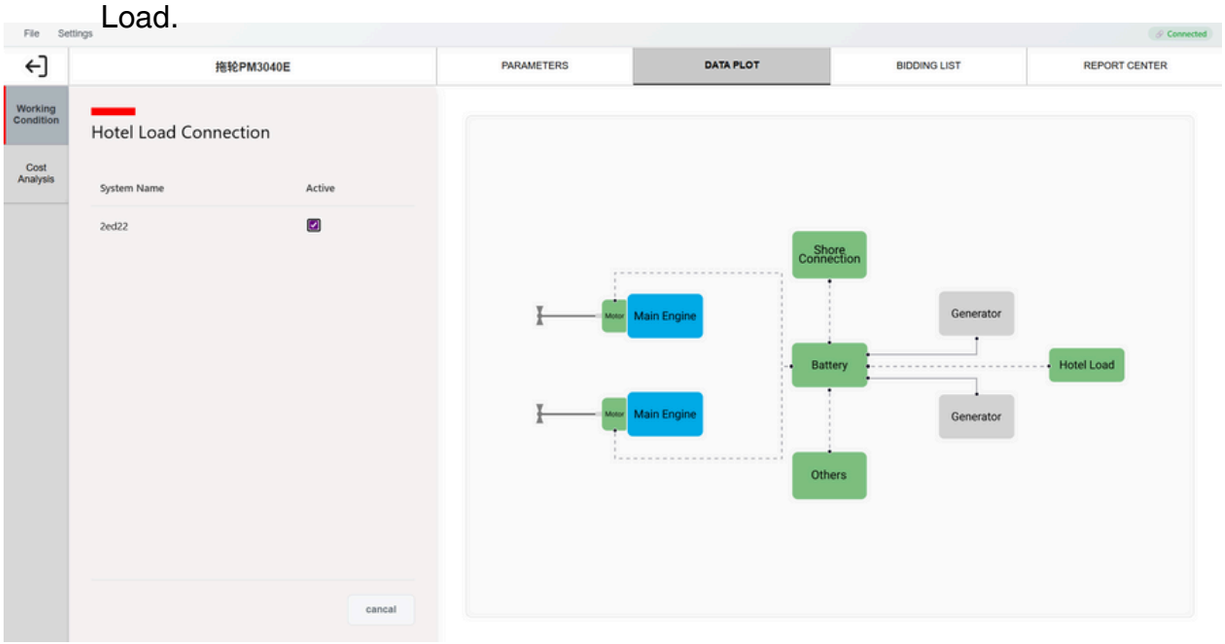
User click Hotel Load：



This section displays the Hotel Load group entered by the user in System Integration.

The user confirms activation of this group here.

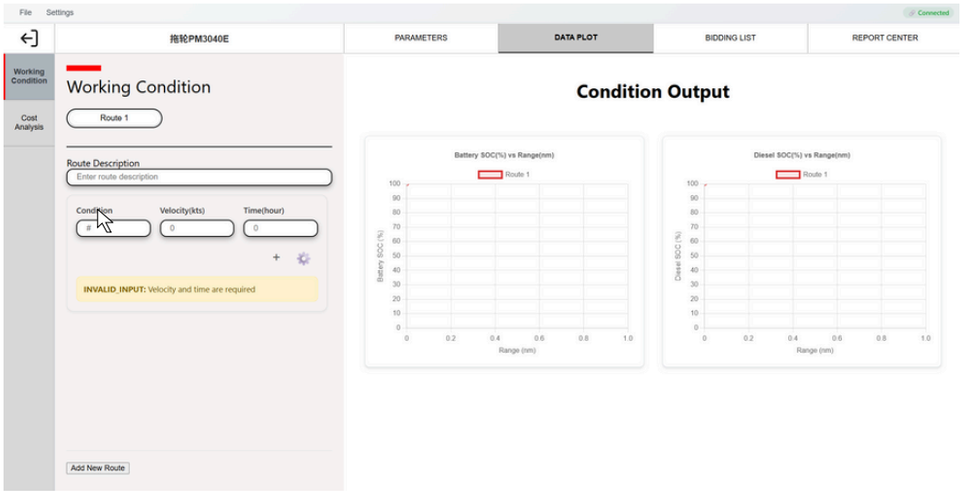
- **UI Display：** If the Hotel Load is connected to the battery, it turns green to indicate it is active. The green line shows current flowing toward the Hotel Load.



Example（Working Condition）

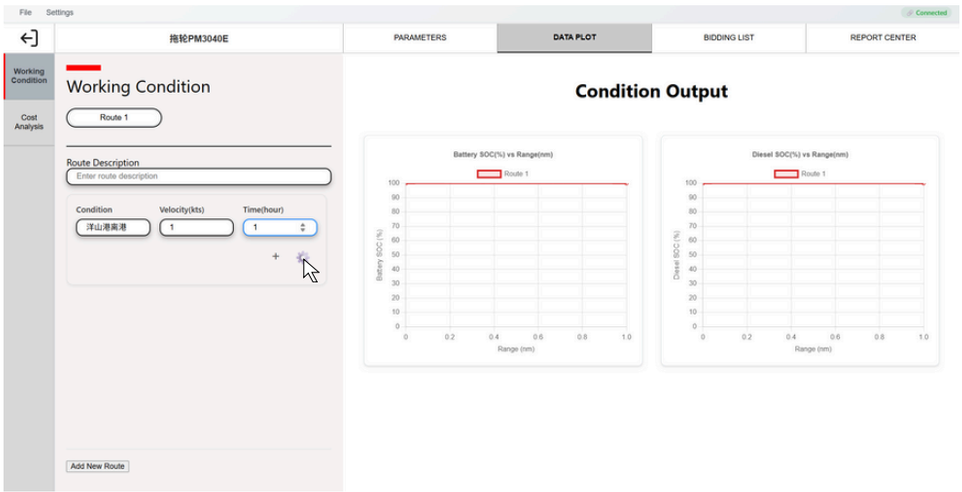
Step 1

The user inputs the condition, velocity, and time parameters for the first operating condition of the first route.



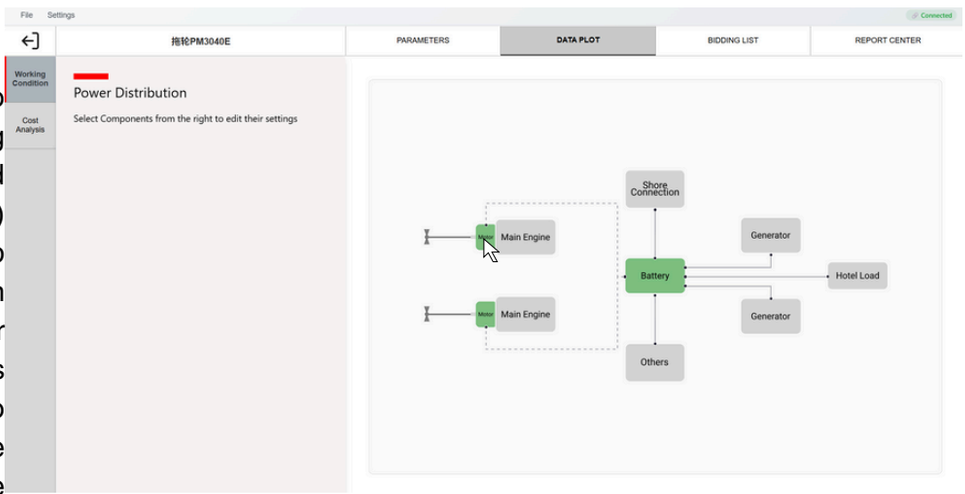
Step 2

After completing the operating condition input, the user clicks ‘More Settings’ for the current condition.



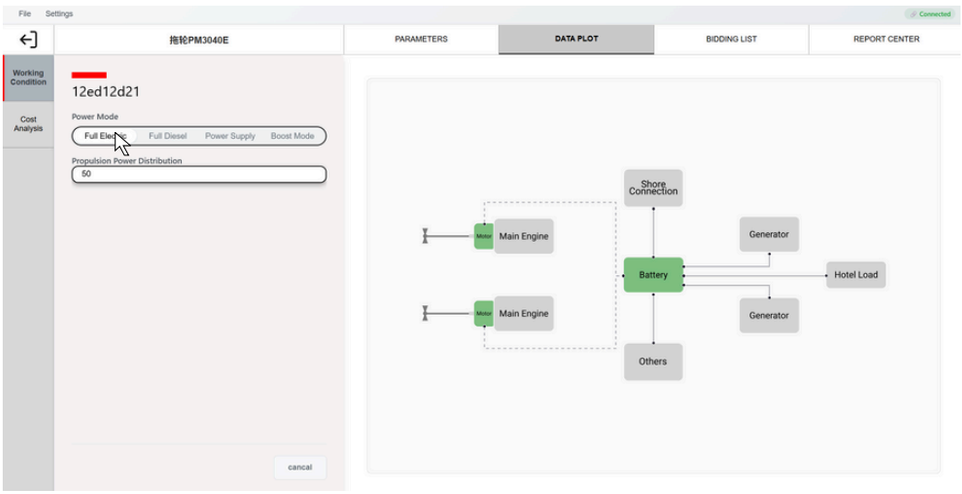
Step 3

The user navigates to ‘More Settings’ (taking a parallel hybrid vessel as an example) and enters the Ship Power Distribution Setting. Here, the user can adjust the ship’s power distribution. To operate in pure electric mode for the current condition (Yangshan Port departure), the user clicks Hybrid System Unit 1.



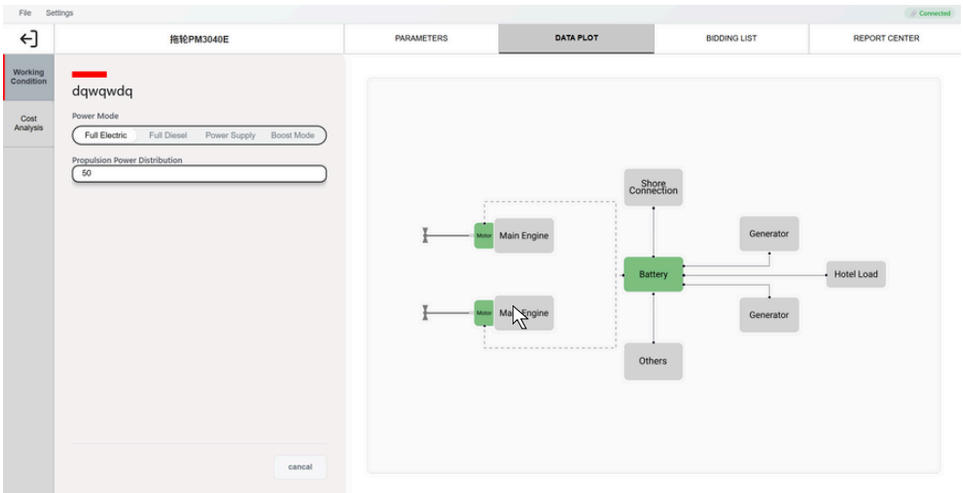
Step 4

The user navigates to configure Hybrid 12ed12d21. Initially, the pure electric and parallel propulsion systems default to pure electric mode. The user confirms the mode.



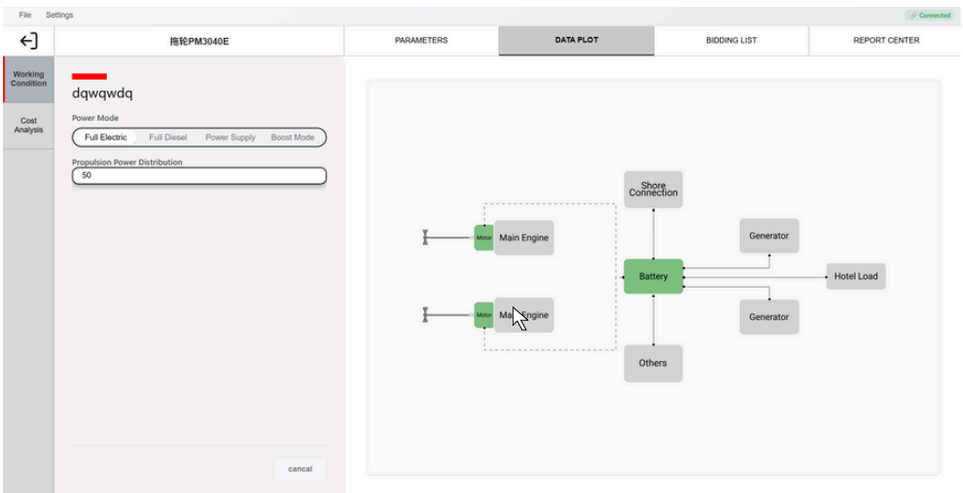
Step 5

The user also needs to configure Hybrid dqwqwdq and clicks on dqwqwdq.



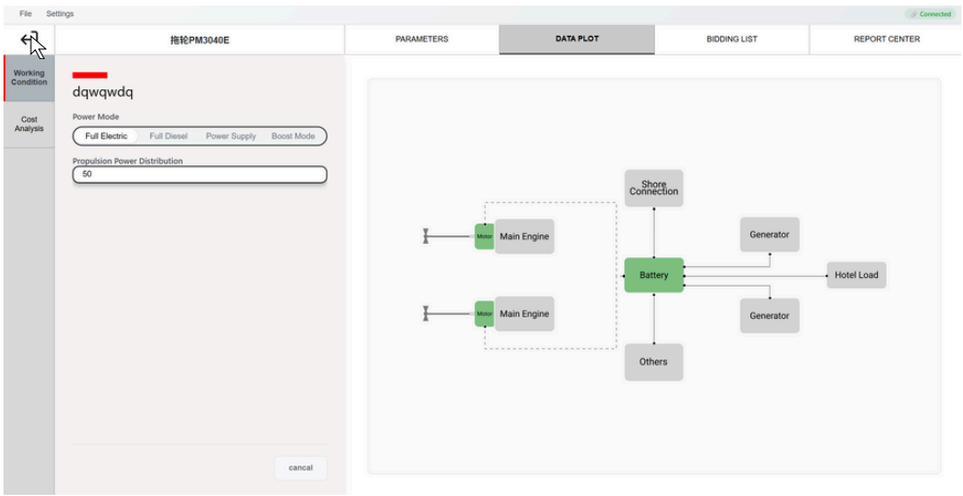
Step 6

The user navigates to configure Hybrid dqwqwdq. Similarly, the pure electric and parallel propulsion systems default to pure electric mode initially. The user confirms the mode.



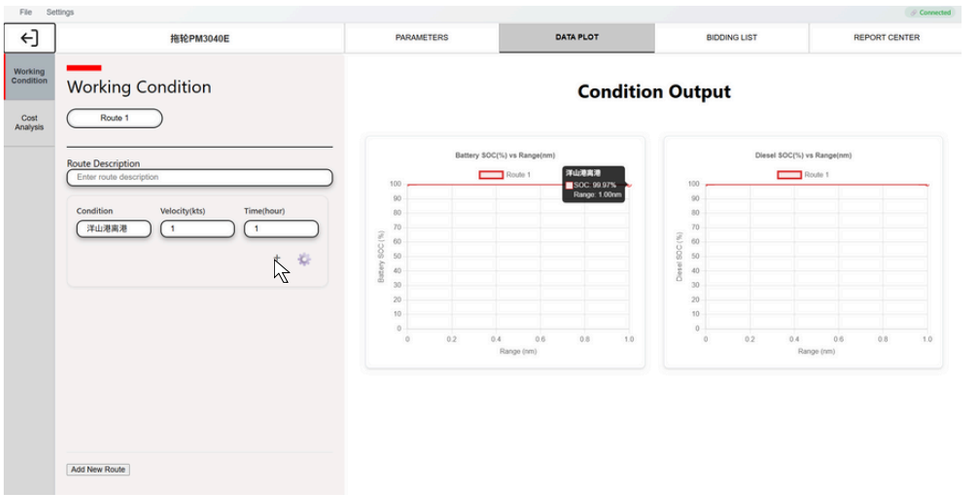
Step 7

After setting the power distribution, the ship operates in pure electric mode under the current condition. The user prepares to return to the Working Condition interface.



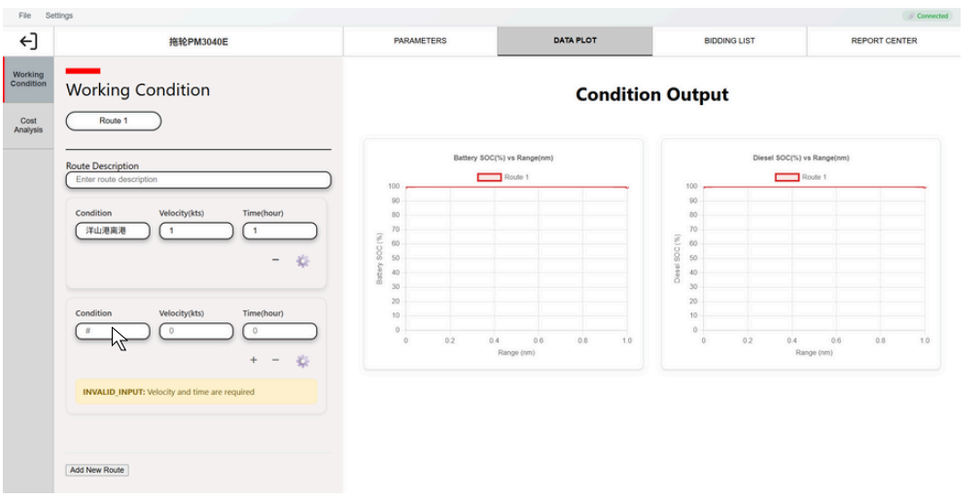
Step 8

The user returns to the Working Condition interface. The curve on the right is generated synchronously. To create a new operating condition, the user clicks '+'.



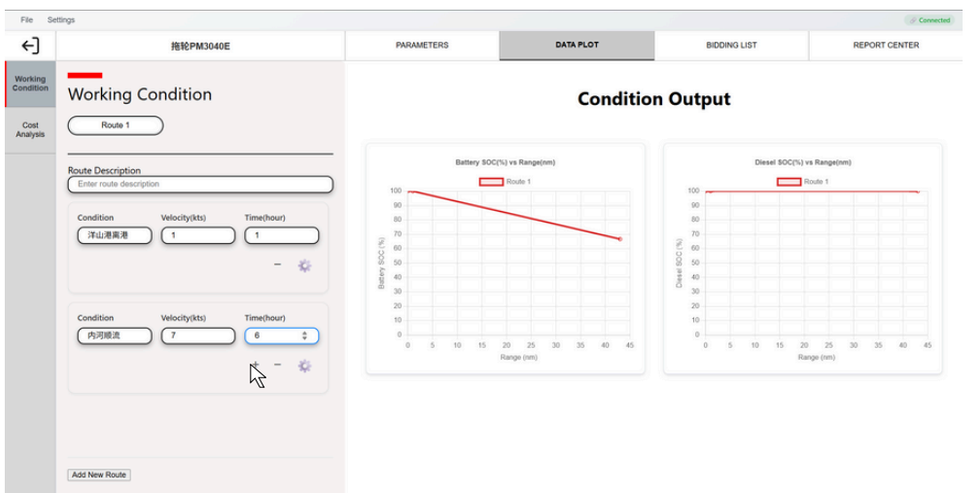
Step 9

The user adds a new operating condition by clicking '＋' and enters the condition, velocity, and time parameters for the first route's second operating condition.



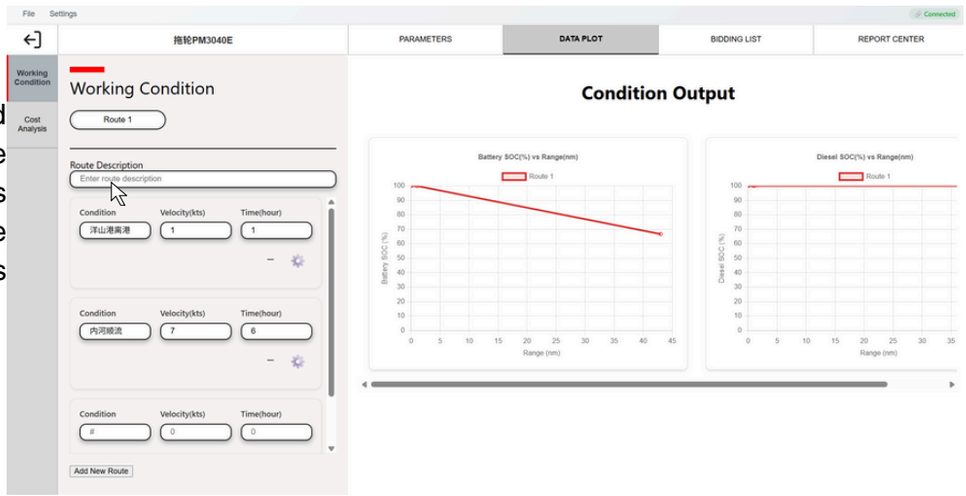
Step 10

After entering the operating condition, click 'New Condition.' The new condition inherits the previous power distribution by default.



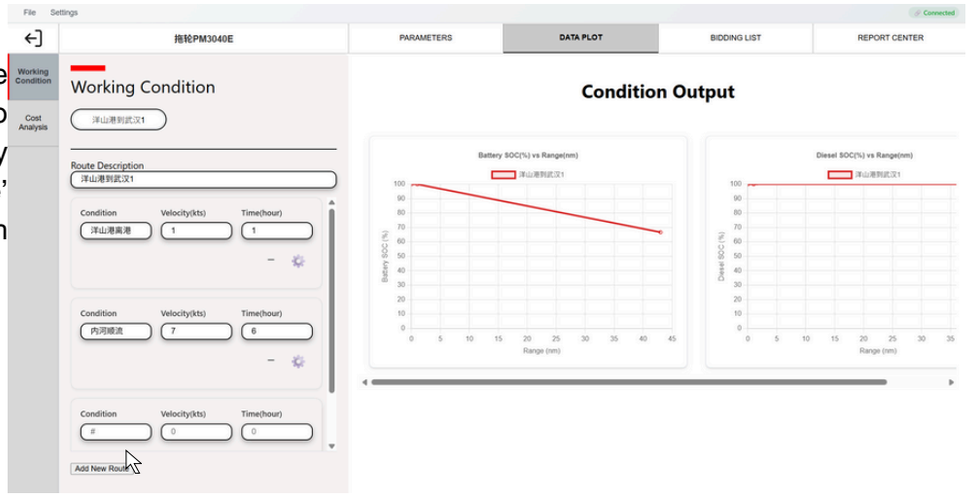
Step 11

Click ‘＋’ to add a third condition. Left curve extends previous power distribution (pure electric) to it. User sets the route name next.



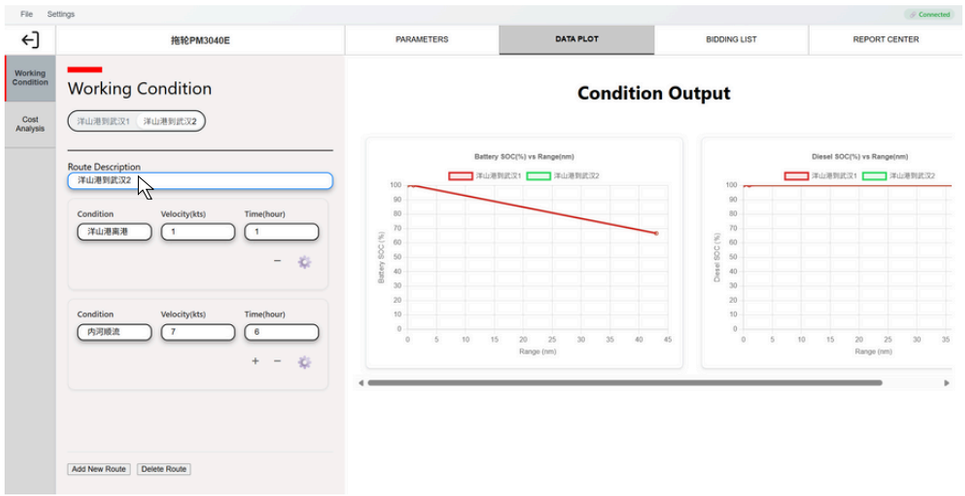
Step 12

The user sets the route name and prepares to create a new route. They click the ‘New Route’ button to compare it with the previous route.



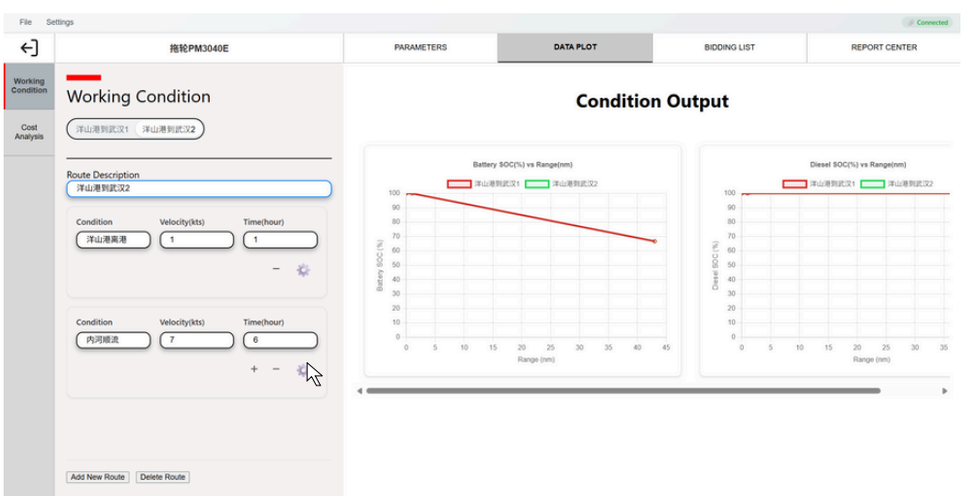
Step 13

The user sets the route name and repeats steps 1–9 for Route 2.



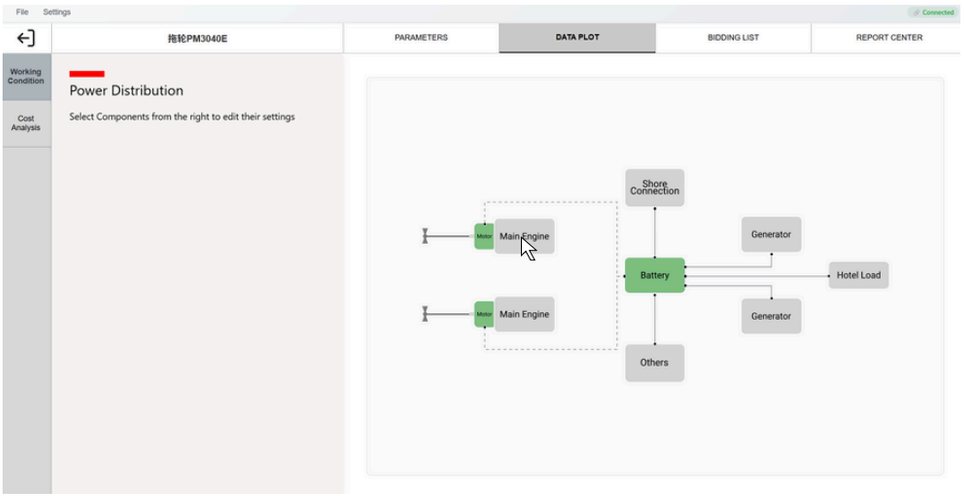
Step 14

The user decides to set the power distribution for the downstream inland waterway condition and clicks ‘More Settings’ for this condition.



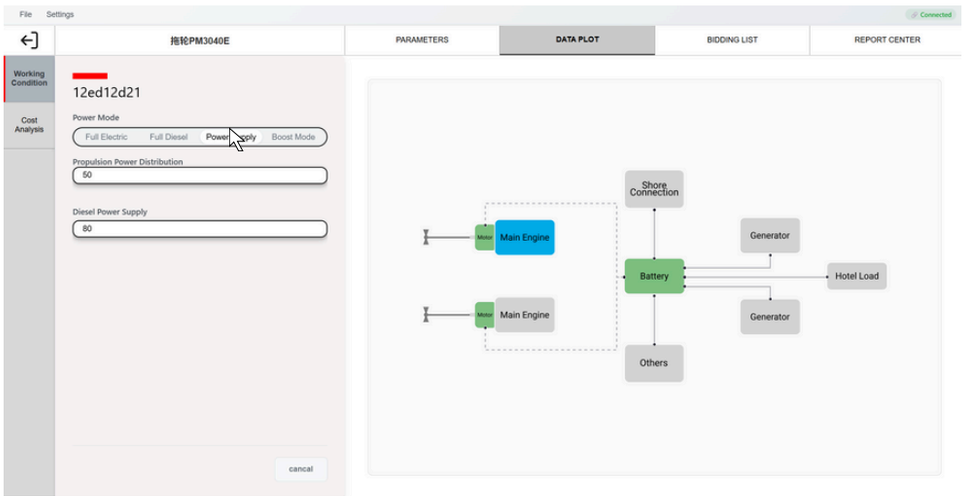
Step 15

The user decides to switch the power to Supplying Power mode and clicks the parallel hybrid unit.



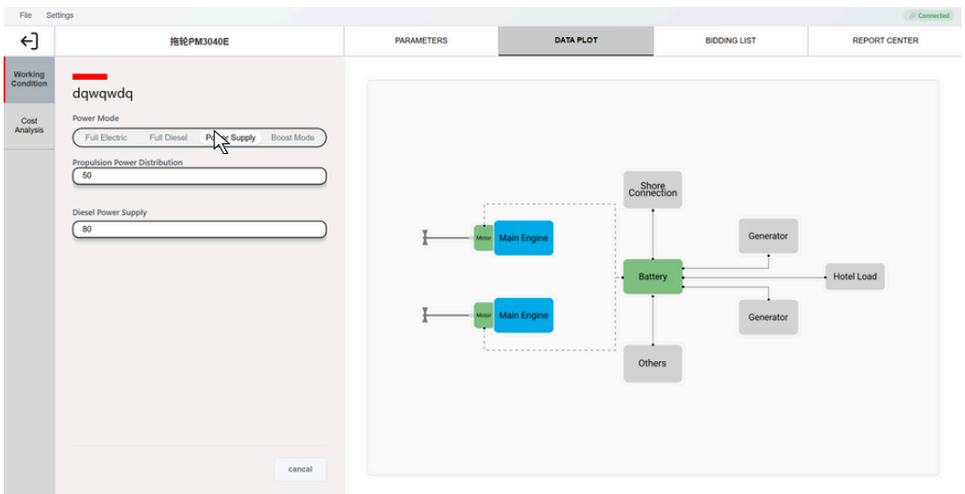
Step 18

The user navigates to configure Hybrid 12ed12d21, enables Power Supply mode under the parallel hybrid system, increases the diesel main engine power to 80%, and clicks ‘Confirm.



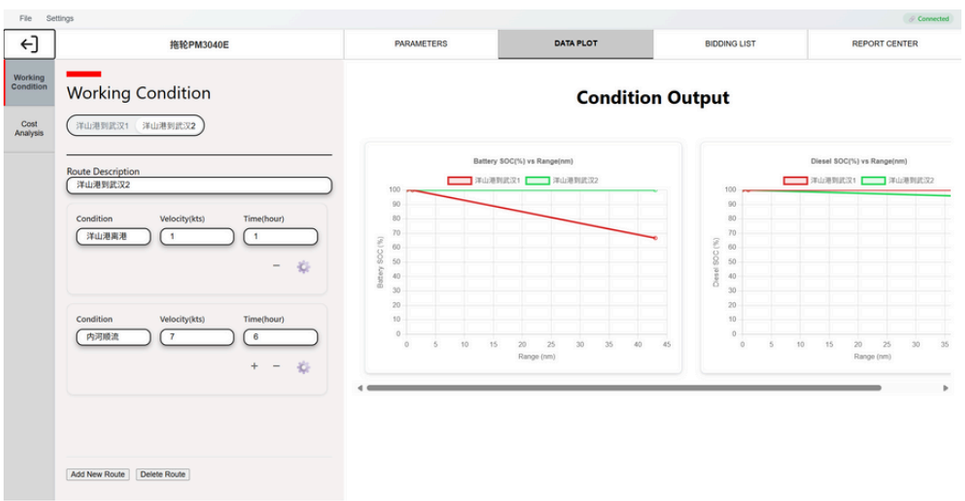
Step 19

The user navigates to configure Hybrid dqwqwdq, enables Power Supply mode under the parallel hybrid system, increases the diesel main engine power to 80%, and clicks ‘Confirm.’



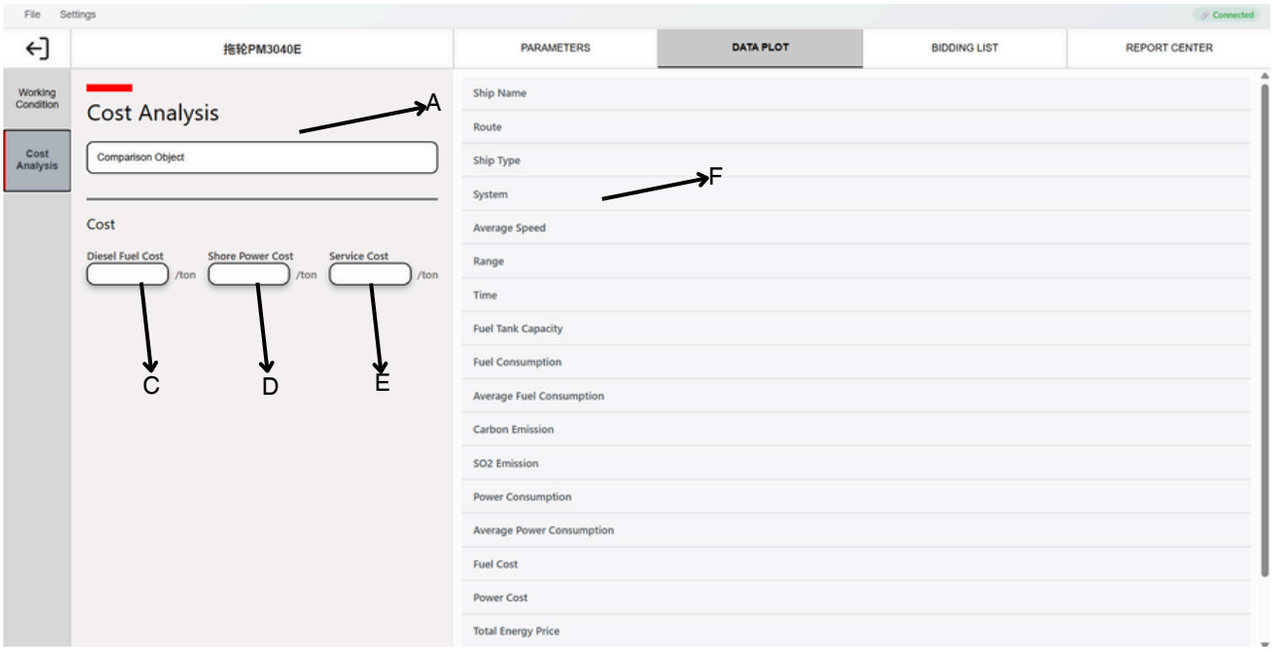
Step 20

The user returns to the Working Condition interface. At this time, two curves appear at the right-hand output section.



3.3 Cost Analysis

Core Function： After completing the ship's operating condition setup, the user can perform an economic analysis for a specific route by entering fuel price, electricity price, and service fees. The user can select the analysis items and add additional analysis targets.



A，Comparison Object

- **Core Function:** The user can add comparison targets here, displaying all routes from all ships for selection.

B， Diesel Fuel

- **Core Function:** The user enters the fuel price here, in tons, with the currency symbol corresponding to the user's region.

C， Shore Power

- **Core Function:** The user enters the electricity price here.

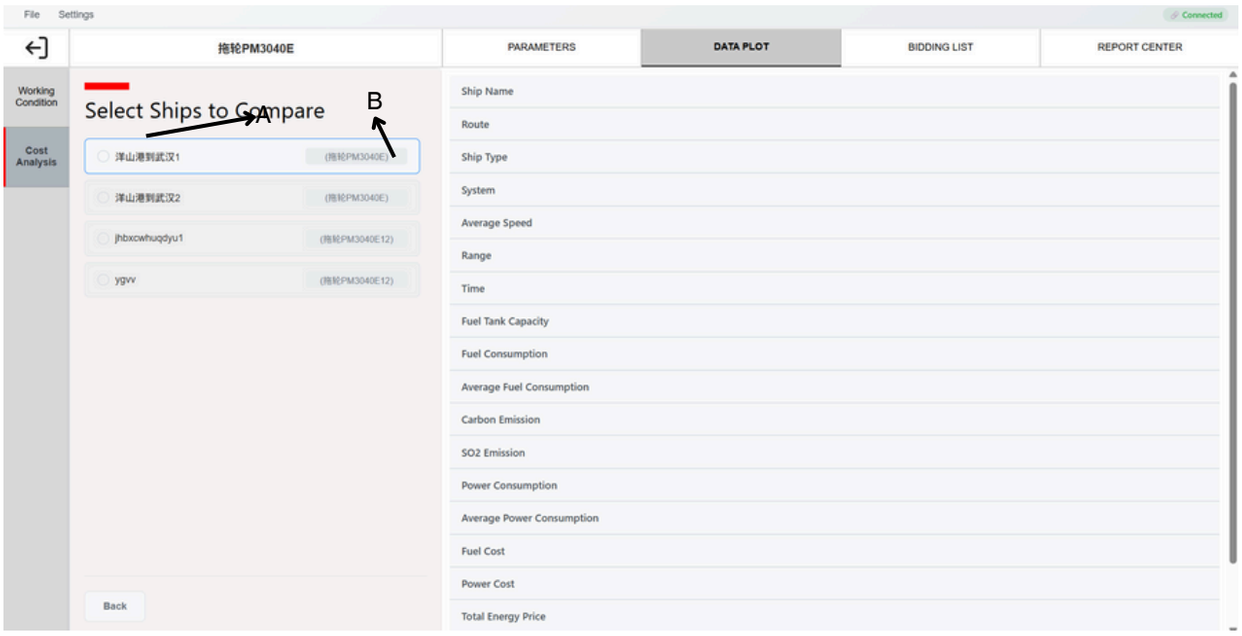
D，Service

- **Core Function:** The user enters the service fee here.

E，Output Content

- **Core Function:** Users can view the economic analysis table here, which is generated by calculation based on the comparison objects.

3.3.1 Comparison Object



A, Route Name

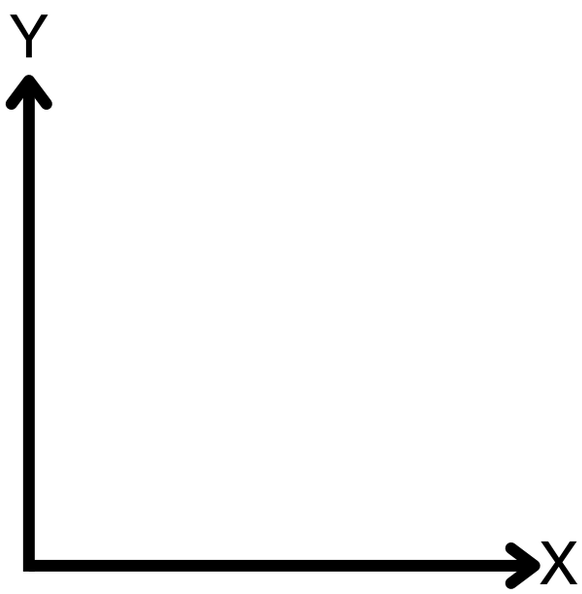
- **Core Function:** Displays the analysis path name

B，Ship Name

- **Core Function:** Shows which ship name the path corresponds to.

The Y axis of the table is the analysis content options

The X-axis of the table is the comparison object (maximum number 5)



3.3.2 Generating Cost Analysis Table

A←	Ship Name
B←	Route
C←	Ship Type
D←	System
E←	Average Speed
F←	Range
G←	Time
H←	Fuel Tank Capacity
I←	Fuel Consumption
J←	Average Fuel Consumption
K←	Carbon Emission
L←	SO2 Emission
M←	Power Consumption
N←	Average Power Consumption
O←	Fuel Cost
P←	Power Cost
Q←	Total Energy Price
R←	Price Per NM
S←	Price Per 100 NM

A, Ship Name

- **Core Function:** Displays the name of the ship being compared.

B, Route Name

- **Core Function:** Displays the path name of the comparison object

C, Ship Type

- **Core Function:** Displays the ship type to be compared

D, System

- **Core Function:** Displays the ship systems being compared

E, Average Speed

- **Core Function:** Displays the average speed of the comparison objects

F, Range

- **Core Function:** Display the mileage of the comparison object

G, Time

- **Core Function:** Displays the total time taken to compare objects

H, Fuel Tank Capacity

- **Core Function:** Displays the fuel tank capacity of the comparison object

I, Fuel Consumption

- **Core Function:** Displays the total fuel consumption of the comparison object

J, Average Fuel Consumption

- **Core Function:** Displays the average fuel consumption per nautical mile of the comparison object ship type

K, carbon Emission

- **Core Function:** Displays the carbon emissions of the comparison object (tons)

L, So2 Emission

- **Core Function:** Displays the sulfur dioxide emissions of the comparison object (Kg)

M, Power Consumption(kWh)

- **Core Function:** Displays the total power consumption of the comparison object

N, Average Power Consumption (kWh)

- **Core Function:** Displays the average power consumption per nautical mile of the comparison object

O, Fuel cost

- **Core Function:** Displays the fuel consumption price of the comparison object

P, Power Cost

- **Core Function:** Shows how much power the comparison object consumes

Q, Total Energy Price

- **Core Function:** Displays the total energy consumption price of the comparison object (and the operating cost of the path)

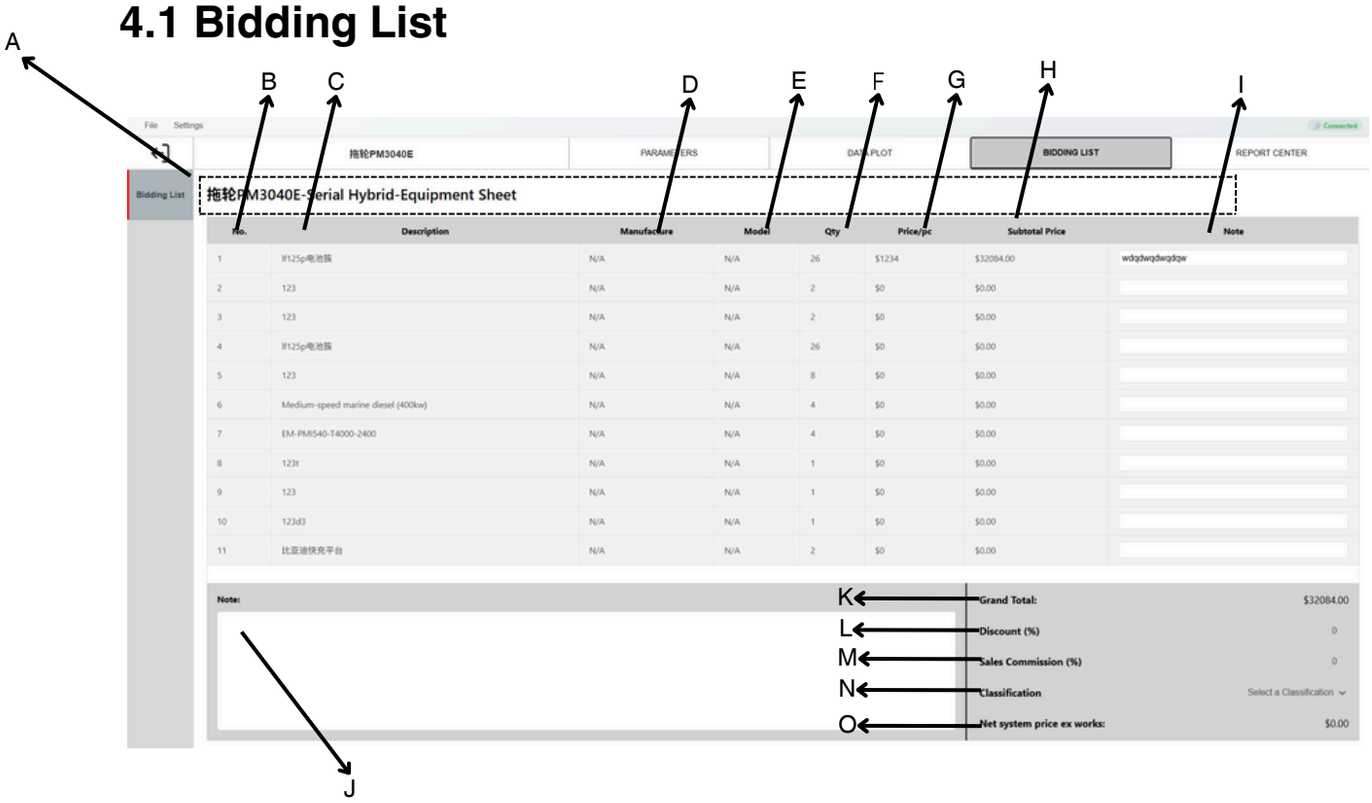
R, Price per Nm

- **Core Function:** Displays the average nautical mile price of the comparison object

S, Price per 100Nm

- **Core Function:** Displays the average price per 100 nautical miles of the comparison objects

4.1 Bidding List



A, Bidding List Description

- **Core Function:** Display the name of this price list. The name of the list consists of: [Ship Description] + [Propulsion System] + Main

B, No.

- **Core Function:** Displays the system number of the vessel to be compared

C, Description

- **Core Function:** The device name is displayed according to the system configuration. Users can change the name by modifying the option parameter in the component.

D, Manufacture

- **Core Function:** Displays the manufacturer of the device according to the system configuration. Users can change the name by modifying the option parameter in the component

E, Model

- **Core Function:** Displays the device model according to the system configuration. Users can change the name by modifying the option parameter in the component.

F, Qty

- **Core Function:** Displays the number of devices according to system configuration

G, price/pc

- **Core Function:** The price of the device is displayed according to the system configuration. Users can change the name by modifying the option parameter in the component. The currency symbol can be selected in the settings.

H, Subtotal Price

- **Core Function:** Displays the total price of the device, which is the device price × the number of devices

I, Product Note

- **Core Function:** Display the device notes, users need to fill in the notes themselves

J, Bidding List Note

- **Core Function:** Displays the production model of the device. The user can change the name

K, Total

- **Core Function:** Displays the total price of the user's product quotation sheet. The user cannot modify it. The currency symbol is the currency symbol selected in price/pc.

L, Discount

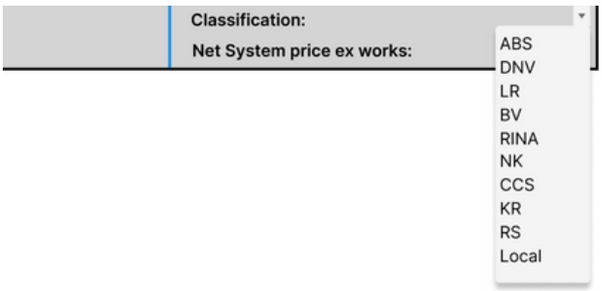
- **Core Function:** Display the user's discount on the product, the user enters the percentage

M, Sale commission

- **Core Function:** Displays the user's commission for product sales, the user enters the percentage

N, Classification

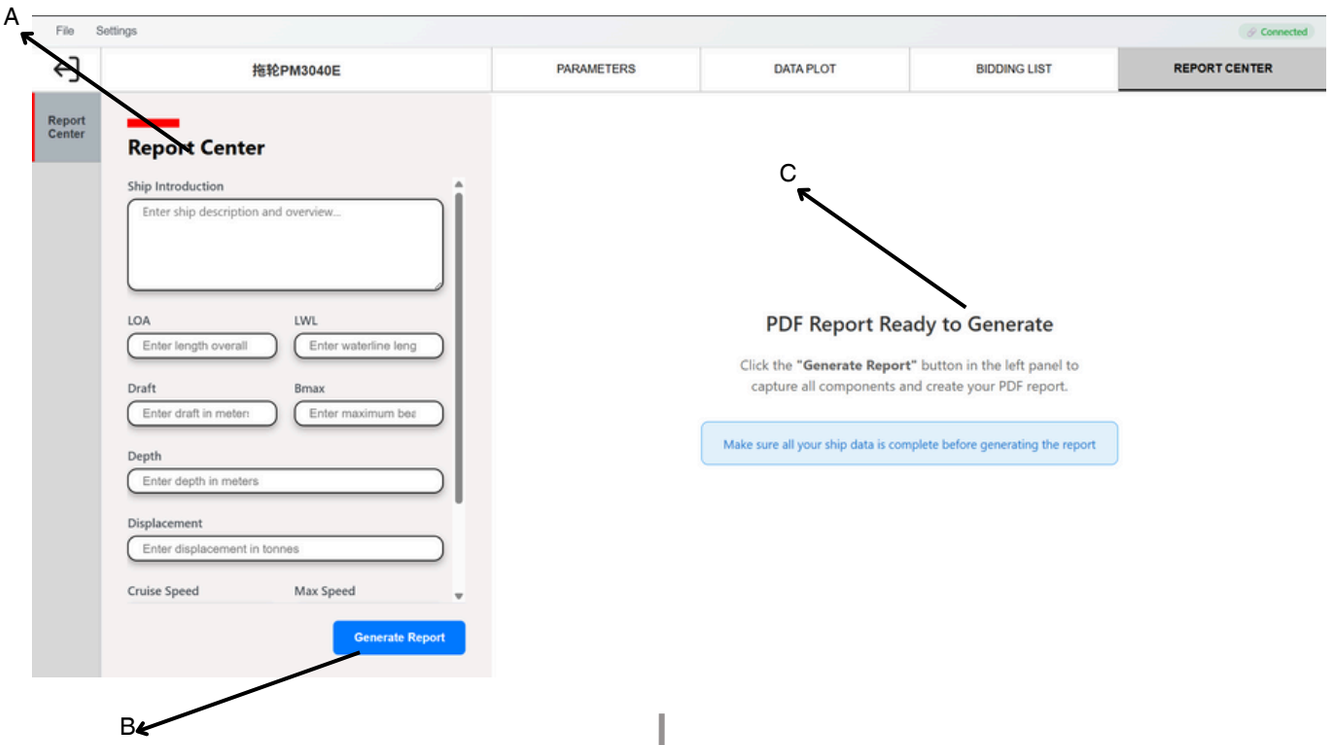
- **Core Function:** Displays the user's classification society selection for this ship



O, Net system price ex works

- **Core Function:** Displays the total price of all user products. The user cannot modify it. The currency symbol is the currency symbol selected in price/pc.

5.1 Report Center



A, Report Center Input area

- **Core Function:** The user fills in the basic information of the vessel

B, Generating Report

- **Core Function:** After filling in the information, the user clicks Generate Report

C,PDF Report Area

- **Core Function:** Display PDF file preview according to system configuration and can be downloaded