ClassNK ZETA user manual

(Version 2024-07-31)
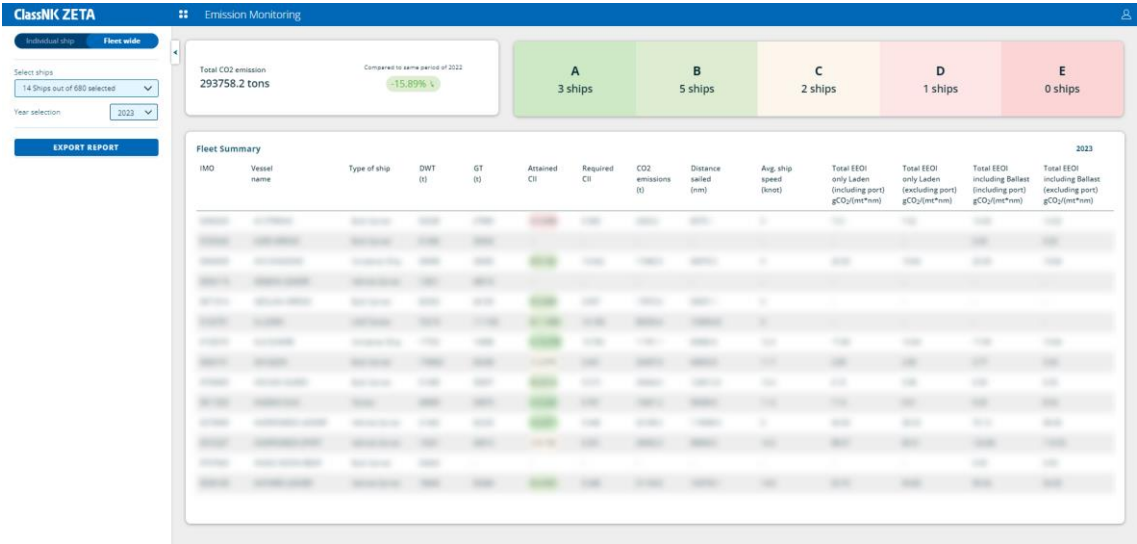
## CONTENTS

1 INTRODUCTION

ClassNK ZETA is a tool that links to the ClassNK MRV Portal, a system that stores data such as ship fuel consumption. It is equipped with features for constantly monitoring CO2 emissions and CII ratings of individual ships and entire fleets and for simulating how CO2 emissions and CII ratings would change if slow steaming, etc., were implemented.

The web-based user interface is accessible on ZETA platform, https://zeta-fleetintelligence.napa.fi

Users can navigate the module by clicking the button at the top bar.
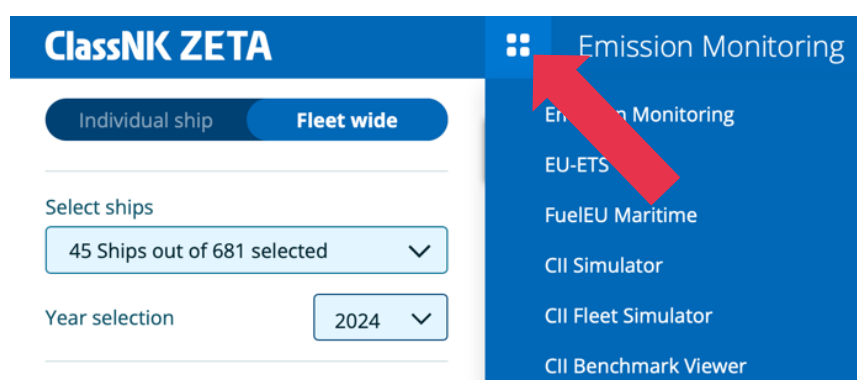
2 EMISSION MONITORING (INDIVIDUAL SHIP)

In Emission Monitoring(Indivisual Ship), the user can easily check the CO2 emissions and CII/EEOI values for the selected ship on annual and voyage basis at a glance.
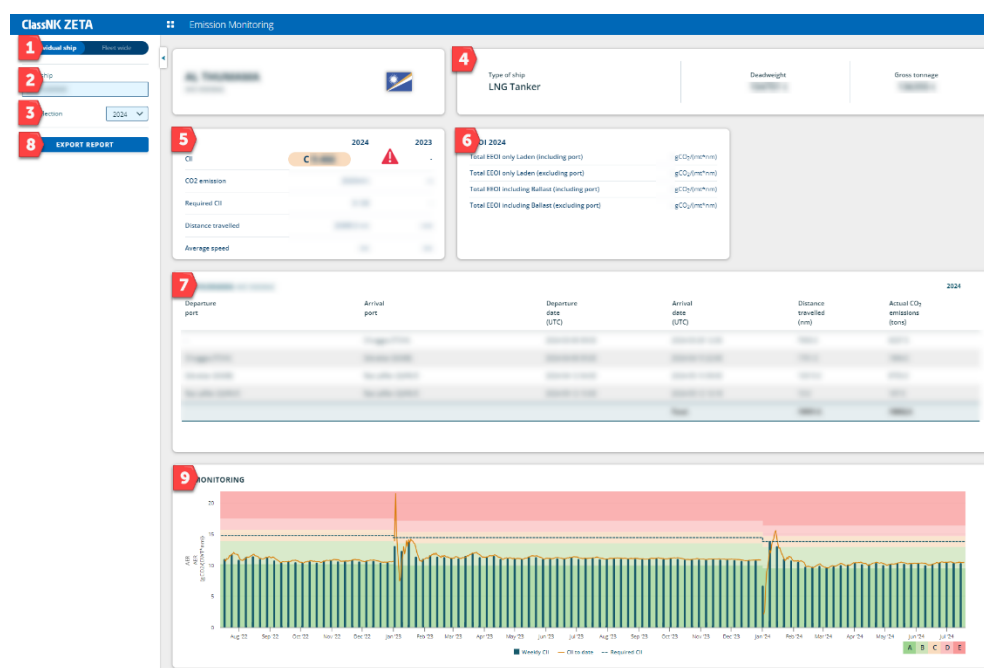
1. Users can switch the Individual ship view / fleet wide view.

2. Users can select the ship by searching the ship name or IMO number.

3. Users can select the year that the data will be visualized.

4. Users can see the ship type/Deadweight/Gross tonnage at the top of the card.

5. Users can see the yearly CII rating and CO2 emissions, etc.

   a. Users can recognize whether there are data discrepancies or not when the following notice is displayed.
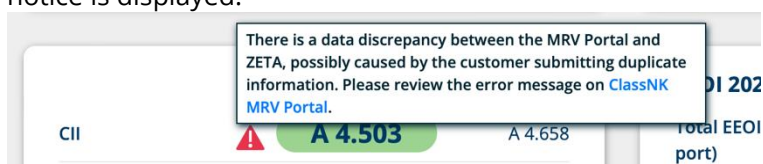
6. Users can see the EEOI value for the selected year.

7. Users can see the distance and CO2 emissions, etc. by the voyage.

   a. Users can see the fuel breakdown information when hovering over the mouse on the "Actual CO2 emissions (tons)" column.

8. Users can export displayed information in PDF format.

9. User can see the weekly CII value for the selected year. The black bar chart shows the weekly AER value which is calculated with the week data available. The yellow lines shows the cummulative AER and the dotted line shows the requried CII. When users hover over the mouse on the graph, the detail information about CII is visible.

3   EMISSION MONITORING (FLEET WIDE)

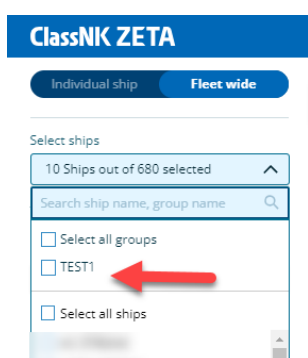In Emission Monitoring (Fleet Wide), the users can easily check the CO2 emissions and the yearly CII/EEOI values for the selected fleet at a glance.
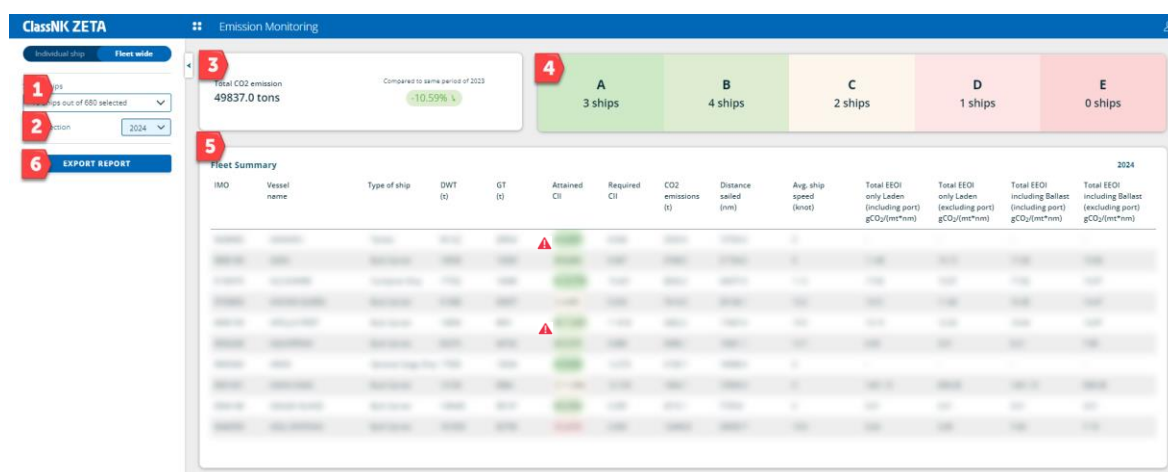
1. Users can select the ship by searching the ships or group name.

    a. If the users created the custom group in Settings, the custom group is shown in the drop-down list.

2. Users can select the year that the data will be visualized.

3. Users can see the total CO2 emissions for the selected fleet.

4. Users can see the CII rating distribution for the selected fleet.

5. Users can see the CO2 emisssions, CII rating and EEOI, etc. by ships.

    a. Users can recognize whether there are data discrepancies or not with each ship when the following notice is displayed.
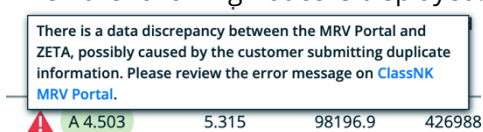
6. Users can export displayed information in PDF format.

4   EU-ETS (INDIVIDUAL SHIP)

The EU-ETS module shows the EU-ETS voyages and applicable CO2 emissions, etc. for ship or fleet on voyage basis. Users can see the surplus/shortfall of emission allowances (EUA) compared to the GHG emissions by entering the EUA. Users can also register parties responsible for EUA, charterer, administering authority, management company.

1.   Users can switch the Individual ship view / Fleet wide view.

2.   Users can select the ship by searching the ship name or IMO number.

3.   Users can select the year that the data will be visualized.

4.   Users can input the EUA for indivisual ships. Users should input EUA which are already purchased or to be purchased by your company to top field. Users should input EUA whch are already transferred or to be transferred from other companies to bottom field.

5.   By clicking the "EDIT EXPENSE SPLIT", the users can merge/unmerge each port-to-port voyage and manually input Chartering Broker/Admin Country/Management Company info by voyage.

o As a default, the port-to-port legs are automatically merged upon the input value in the ClassNK MRV Portal. In the EU-ETS voyage definition, only the port with loading or unloading activity can be the departure or arrival port. The voyage merge is automatically done if the loading and unloading information is available in the submitted ship data. However, if the loading and unloading information is not available in the system, users have the responsibility to manage the voyage according to the EU-ETS Voyage Definition manually as follows:
- "MERGE" button: The multiple port-to-port legs can be merged as an EU-ETS voyage
- "SPLIT VOYAGE" button: The merged voyages can be split by each port-to-port leg

o For the EUA of each voyage, select Internal EUA if your company is responsible for and select External EUA if other company, such as charterer, is responsible for. The total emissions for each voyage with selected Internal / External EUA are shown in the Internal / External EUA in 9.

6. Uses can select the year to which transitional measure apply and will display the CO2 emissions according to the measures.

7. Users can export displayed information in CSV or PDF formats.

8. The sum of "EUA purchased" and "EUA received" at 4 is shown.

9. It shows the total EU-ETS CO2 emissions. The self purchased EUA (Internal EUA) and received EUA from other company (External EUA) can be registered on "EDIT SPLIT VOYAGE" page.

10. Users can see surplus/shortfall of EUA (EUA purchased + EUA received) – (CO2 emissions EU-ETS)).

11. Users can see the calculated CO2 emissions by EU-ETS voyages and download the voyage information in pdf format.

- CO2 calculation of EU-ETS Voyage

  - The FOC at sea and the FOC at the arrival port will be considered in calculating the total CO2 of the voyage.

  - If the arrival port is a non-EU port, the FOC in the arrival port will be ignored for the EU Voyage CO2 calculation.

  - If the specific transhipment port is included during a voyage, the FOC in the transhipment port will be regarded as the FOC at sea (for container ships only).

  - If the transhipment port is a non-EU port, the FOC in the transhipment port will be regarded as FOC at sea (FOC in transhipment port will be regarded as FOC at sea regardless of EU or not) (for container ships only).

- Example of CO2 calculation of EU-ETS Voyage

  - (Within EU) Netherlands – Netherlands: 100% of FOC at Sea + 100% of FOC in arrival Port

  - (From EU) Netherlands – Turkey: 50% of FOC at Sea

  - (Into EU) Turkey – Greece: 50% of FOC at Sea + 100% of FOC in arrival Port

5   EU-ETS (FLEET WIDE)

1. Users can input the EUA purchased and EUA received for the selected ships.

2. Users can see the sum of user input EUA values for each ship in the individual ship view. However, this does not affect any calculation in the Fleet Wide view.

3. The sum of "EUA purchased + EUA received" at 1. is shown.

6 FUELEU MARITIME (INDIVIDUAL SHIP)

The FuelEU Maritime module shows the FuelEU voyages and GHG emissions, GHG intensity of each voyage for the selected ship or fleet. Users can see surplus / deficit of compliance balance, expected penalty and manage Banking / Borrowing.

* FuelEU Maritime regulation is still under discussion for some matters. Such things are not implemented on ZETA but will be implemented smoothly after they are officially fixed.

* GHG intensity of biofuel is calculated using tentative carbon factor because ClassNK MRV Portal system cannot receive those data now. The development work on ClassNK MRV Portal is under going, so please treat it as a reference value untill the development is completed. When it is realized, we will inform you.
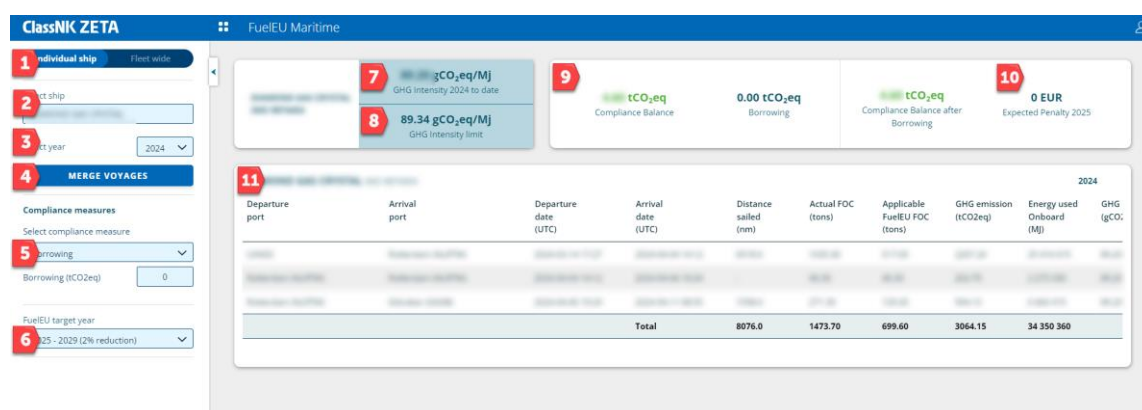
1. Users can switch the Individual ship view / Fleet wide view.

2. Users can select the ship by searching the ship name or IMO number.

3. Users can select the year that the data will be visualized.

4. By clicking the "MERGE VOYAGES", each port-to-port voyage can be merged or split manually. As a default, the port-to-port legs are merged upon the input value in the ClassNK MRV Portal. In the FuelEU Maritime voyage definition, only the port with loading or unloading activity can be the departure or arrival port. The voyage merge is automatically done if the loading and unloading information is available in the submitted ship data to ClassNK MRV Portal. If a voyage classification is incorrect, users can correct it manually (refer to 4 EU-ETS (Indivisual ship) 5.)).

5. Users can choose the compliance measures (i.e. Banking / Borrowing / Include in pool / No measures) for the selected ship and input value. If no compliance measures are applied, users should choose "No measures" (set as initial value). In addition, if users want to bank the remaining compliance surplus after pooling, you can select "Include in pool" and input its value (for pooling settings, refer to 7 FUELEU MARITIME (FLEET WIDE) 2.). An alert will be shown for the following cases.

   i. *When users put the banking number above the positive compliance balance available.*

   ii. *When users put the banking value for the ship, the compliance balance is negative.*

     iii.   When users put the borrowing value that exceeds the upper limit of borrowing (2% of GHG intensity limt $\times$ energy consumption).

     iv.   When users put the borrowing value for the ship which compliance balance is positive.

     v.   When the total sum of the compliance balance in the pool is negative.

6. Users can change the FuelEU Target year; then, the applied GHG Intensity limit for FuelEU is changed accordingly.

7. The GHG intensity of the selected year is visible.

8. It shows the GHG Intensity limit for the selected FuelEU Target year.

9. The compliance Balance of the selected year in 6. is visible. Users can check the selected compliance measure and the value.

10. Users can see the expected penalty for the compliance balance after Banking/Borrowing/Pooling.

11. Users can see the calculated GHG intensity, GHG emissions, etc. by voyages.

- GHG emissions calculation of FuelEU Voyage

  - The FOC at sea and the FOC at the arrival port will be considered in calculating the total GHG emissions of the voyage.

  - If the arrival port is a non-EU port, the FOC in the arrival port will be ignored for the EU Voyage GHG calculation.

  - If the specific transhipment port is included during a voyage, the FOC in the transhipment port will be regarded as the FOC at sea (for container ships only).

  - If the transhipment port is a non-EU port, the FOC in the transhipment port will be regarded as FOC at sea (FOC in transhipment port will be regarded as FOC at sea regardless of EU or not) (for container ships only).

- Example of GHG calculation of FuelEU Voyage

  - (Within EU) Netherlands – Netherlands: 100% of FOC at Sea + 100% of FOC in arrival Port

  - (From EU) Netherlands – Turkey: 50% of FOC at Sea

  - (Into EU) Turkey – Greece: 50% of FOC at Sea + 100% of FOC in arrival Port

7 FUELEU MARITIME (FLEET WIDE)

1. Users can select the ship by searching the ship or group name.

   a. If the user created the custom group in "Settings", the custom group is shown in the drop-down list.

2. Users can modify the compliance measure configuration for the whole fleet in "EDIT COMPLIACNE MEASURES". If users modify the compliance measures and save it, the setting is reflected to the individual ship. If no compliance measures are applied, users should choose "No measures" (set as initial value). An alert will be shown for the following cases.

   i. *When users put the banking number above the positive compliance balance available.*

   ii. *When users put the banking value for the ship, the compliance balance is negative.*

   iii. *When users put the borrowing value that exceeds the upper limit of borrowing (2% of GHG intensity limt $\times$ energy consumption).*

   iv. *When users put the borrowing value for the ship which compliance balance is positive.*

   v. *When the total sum of the compliance balance in the pool is negative.*

3. Users can see the compliance balacne, breakdown of applied Banking/Borrowing/Pooling and expected penalty after the applied compliance measures for the selected fleet.

4. Users can check GHG intensity, compliance balance and the expected penalty after the applied compliance measures by ship.

8 CII SIMULATOR

The CII Simulator is a module that tracks CII and predicts the end of year CII rating (CII EOY) and change of CO_2 emissions for ship. Based on different operating conditions (e.g. slow steaming, etc.), users can see the impact of a change in operation profile on the CII EOY / CO_2 emissions.
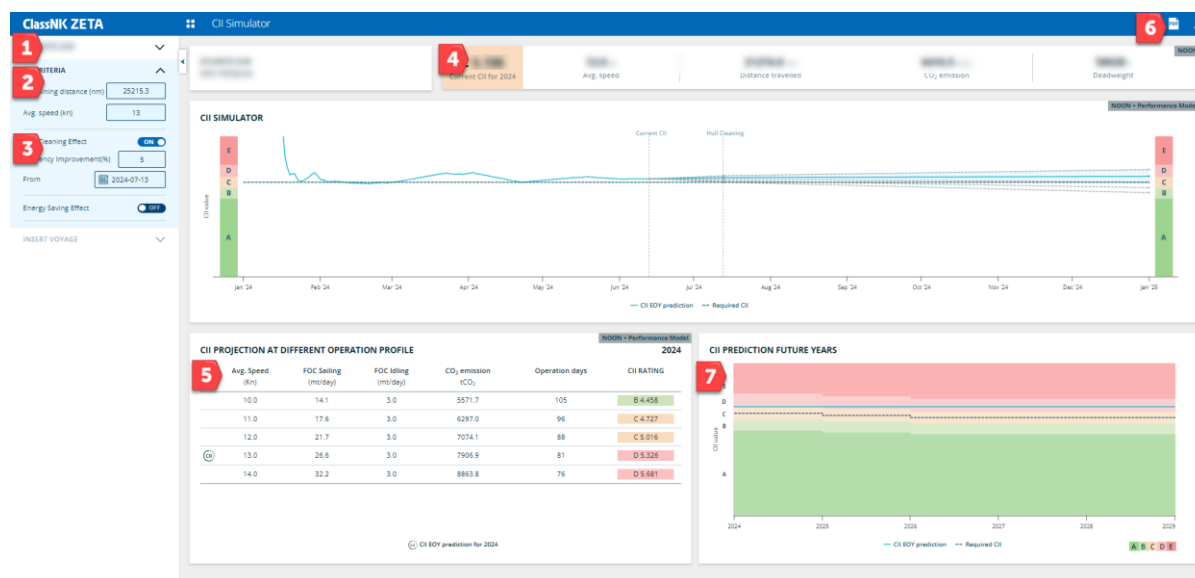
1. Users can select the ship by searching the ship name or IMO number.

2. For the end-of-year CII simulation, users can input the distance and average speed to sail for the remaining year. By default, the remaining distance and speed are estimated by considering the historical ship operation profile (The previous year's total distance traveled to the current year). If the user input value is deleted, the user can always see the default value.

3. Users can define the hull cleaning and energy-saving device improved CO_2 emissions impact and schedule. Then, the energy efficiency effect is automatically reflected to the simulation result.

4. Users can see the current CII rating, avg. speed, distance travelled, etc.

5. Users can see the CII ratgin prediction at the different operation profiles for the remaining year. The profile as it is under current operations or user input is marked as follows. The

different profiles give variations in speed, idling, and operation days. This enables you to see the effect on CO2 emissions and CII rating.

CII PROJECTION AT D

	Avg. Speed (Kn)
	8.0
	9.0
	10.0
CII	11.0
	12.0

6. Users can export the report in the pdf format.

7. Users can see how the CII rating will be changed in the upcoming years if the ship keeps the "CII EOY" value estimated.

9 CII FLEET SIMULATOR

The CII Fleet Simulator is a module that tracks ship CII and predicts the end of year CII (CII EOY) and change of CO2 emissions for fleet. Based on different operating conditions (e.g. slow steaming, etc.), users can see the impact of a change in operation profile on the CII EOY at the fleet level.
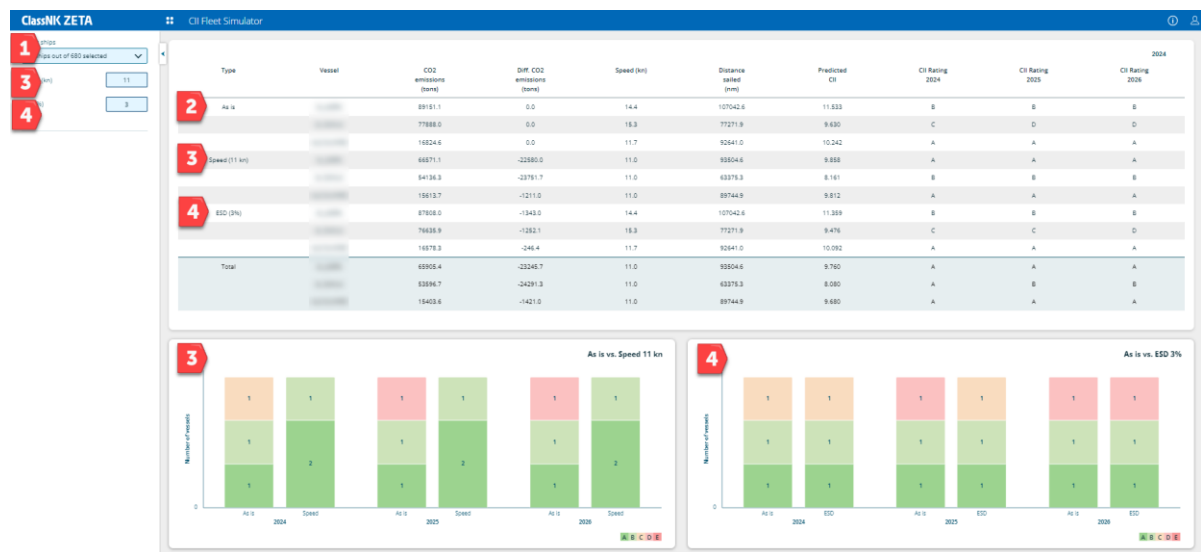
1. Users can select the ship by searching the ship name or IMO number.

2. Users can see the predicted CII rating for the current year, CO2 emissions, CII ratings in the upcoming years, etc. based on the current ship speed and remaining distance.

3. Users can input the speed for the simulation. The input speed is then used for the remaining years of the simulation, and the change of CII rating, reduction effect of CO2 emissions are estimated accordingly.

4. Users can input the ESD impact. Then, the input efficiency is used for the remaining year simulation, and the change of CII rating, reduction effect of CO2 emissions are estimated accordingly.

10 CII BENCHMARK VIEWER

CII benchmark viewer is a module that compares the CII ratings of each ship with other ships by "ship type and size" and by "ship age". Users can compare verified IMO-DCS statistical data with EU-MRV public data.


1. Users can select and display IMO-DCS statistical data. Data for following ship type is not available.
   Gas Carrier, Combination Carrier, Cruise Passenger Ship, Refrigerated Cargo Carrier, RoRo Cargo Ship, RoRo Passenger Ship

2. Users can select and display EU-MRV data.

3. Users can check CII rating for selected ship and statistical data. The each figure means as follows:

   -Black vertical bar: 95% of ships in selected ship's ship type/size group are included in this group.The horizontal line in the middle of the bar shows the average of this ship type/size group.
   -Red point: CII rating of selected ship.

   -Black points: CII rating for ships of EU-MRV pubic data.

4. Users can check CII rating and age of selected ship.

11 SHIP GROUP MANAGEMENT

The user can access the settings by clicking the "Settings" at the top bar.
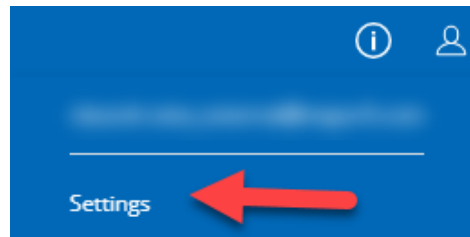
- By clicking the "CREATE GROUP" button, the user can create a custom group.
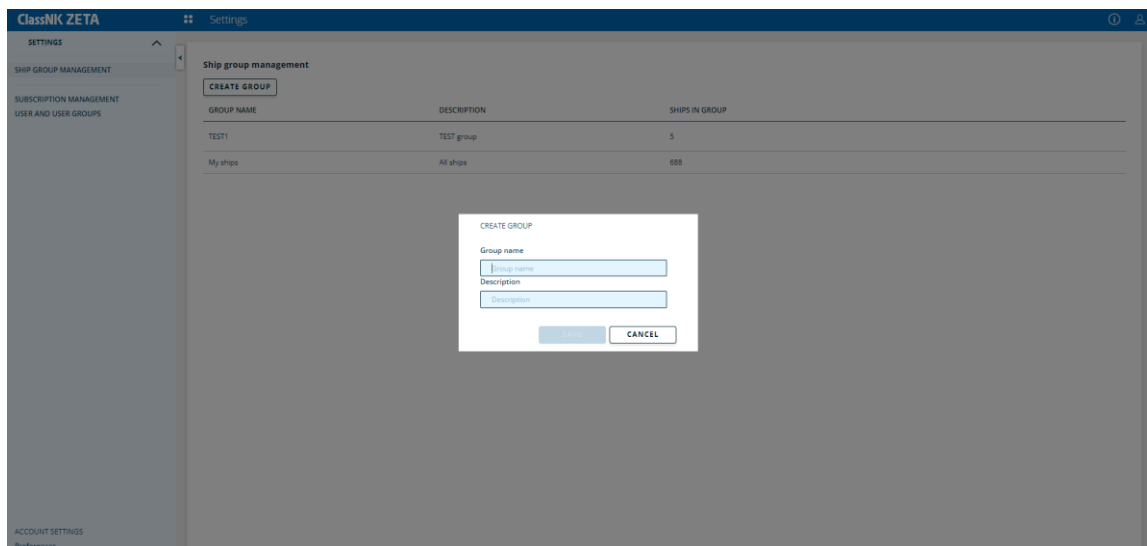
- By double-clicking the ship name or by clicking the ">" or "<" button, the user can edit the ship list for the group.