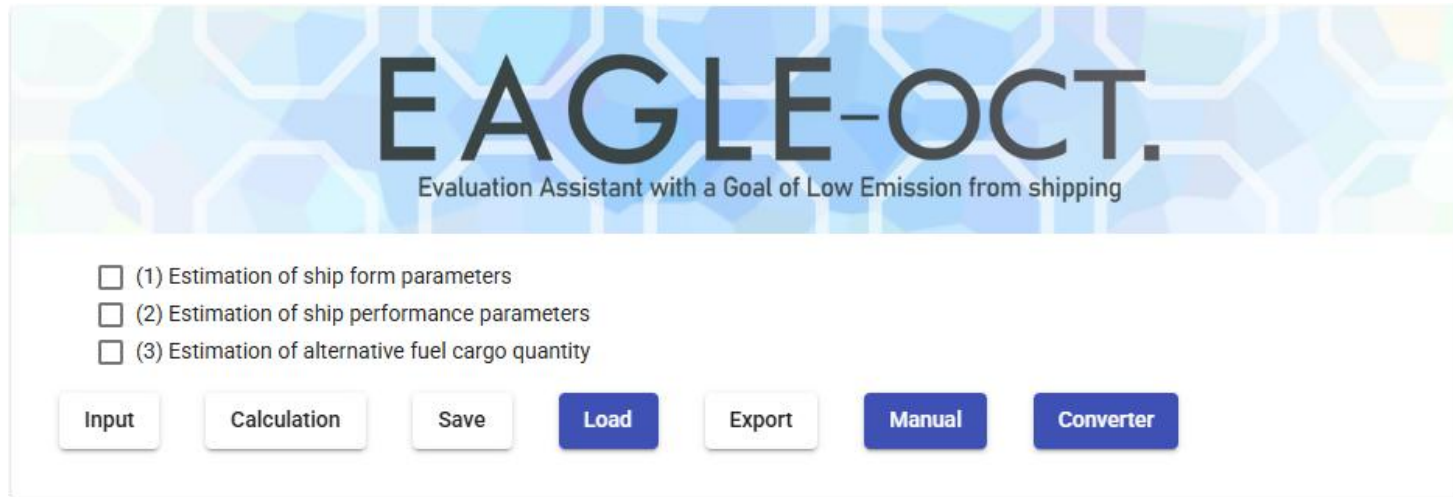




EAGLE-OCT.-web V2.1 Startup Guide

ver. 2

Introduction

Before Use

To use this application, please access NMRI Cloud and complete the following:

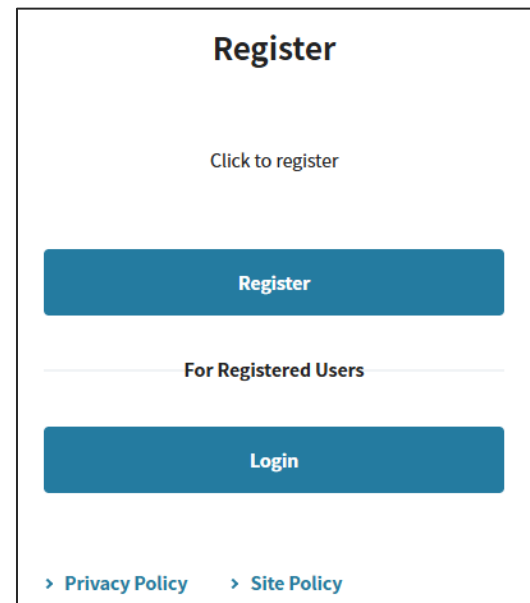
- ✓ User registration
- ✓ Application usage request

NMRI Cloud Registration:

<https://cloud.nmri.go.jp/portal/auth/signup>

Please note that usage may become available in as little as approximately two weeks after submission of the request.

Recommended browsers: Google Chrome, Microsoft Edge

A screenshot of a web registration page. At the top, the word "Register" is displayed in bold. Below it, the text "Click to register" is centered. A large blue button with the word "Register" in white is positioned below the text. Underneath the button, a horizontal line separates the registration section from the login section, with the text "For Registered Users" centered above the line. Below the line, a large blue button with the word "Login" in white is displayed. At the bottom of the page, there are two links: "> Privacy Policy" and "> Site Policy".

Register

Click to register

Register

For Registered Users

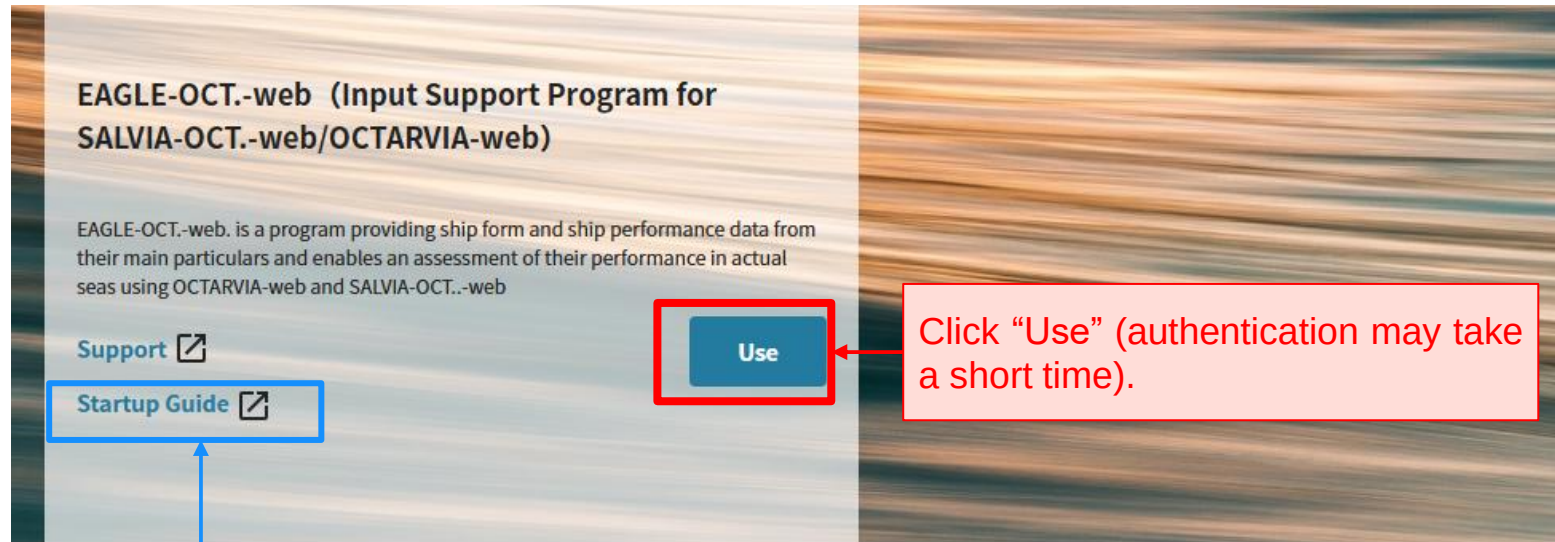
Login

> Privacy Policy > Site Policy

Registration page

(Once registration is completed, you will be redirected to the application usage request page.)

Introduction page



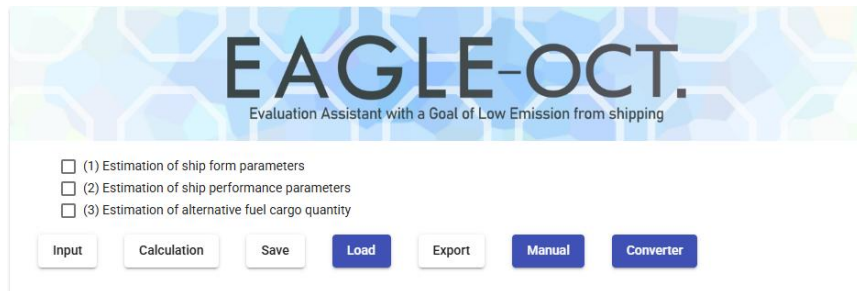
Outline

EAGLE-OCT.-web. is a program providing ship form and ship performance data from their main particulars and enables an assessment of their performance in actual seas using OCTARVIA-web and SALVIA-OCT.-web. This program allows users who do not have detailed ship geometry and performance data to assess the performance of their ships in actual seas.



What is EAGLE-OCT.-web?

- ✓ **EAGLE-OCT.-web** is the web application providing ship geometry and ship and propeller performance from their principal particulars.
- ✓ The output data can be used in **OCTARVIA-web** and **SALVIA-OCT.-web** for evaluation of ship performance in actual seas.
- ✓ This program allows users to evaluate ship performance in actual seas without detailed ship geometry and model test data.



■ Calculation items

- ✓ Estimation of ship form parameters
- ✓ Estimation of ship performance parameters

■ Workflow

- ✓ Select calculation items
- ✓ Prepare input data
- ✓ Execute calculation
- ✓ Review output

Data Input

Data Import

Items That Do Not Change Between Voyages

ship data			
Item	Value	Unit	Remark
Builder	NMRI	-	builder
ID	100	-	ship ID number
Type	1	-	1:Container ship, 2:Pure Car Carrier, 3:Bulk Carrier, 4:Tanker
L_{OA}	310	m	length overall; L_{OA}
L_{pp}	300	m	length perpendiculars; L_{pp}
B_{max}	40	m	maximum breadth; B_{max}
d_{mid_des}	14	m	mean draft in design condition; d_{mid_des}
d_{aft_des}	14	m	aft draft in design condition; d_{a_des}
d_{fore_des}	14	m	fore draft in design condition; d_{f_des}
Δ_{des}	111930	MT	displacement in design condition; Δ_{des}
V_s	26	knot	designated ship speed; V_s
D_p	9	m	propeller diameter; D_p
η_s	0.98	-	transmission efficiency; η_s
gear	1	-	gear ratio; gear(N_p =gear N_E)
N_{Elim}	90	rpm	engine revolution at MCR for setting the limit; N_{Elim}
MCR	45100	kW	maximum continuous rating of engine for setting the limit; MCR

Principal Particulars

- Ship type
- Length overall, Length between perpendiculars, Maximum breadth
- Mean/aft/fore draft in design condition
- Designated ship speed
- Propeller diameter

Main engine

- Transmission efficiency^{*1}
- Gear ratio^{*2}
- Main engine MCR
- Main engine revolution at MCR

*1 If unknown, use the default value of 0.98.

*2 If no reduction gearbox is installed, use the default value of 1.0.

EAGLE-OCT.-web : Input, Calculation

Voyage-Dependent Items

condition in operation			
Item	Value	Unit	Remark
Voy. ID	3	-	voyage ID number
d_{mid_ope}	11.4	m	mean draft in operation; d_{mid_ope}
d_{aft_ope}	11.6	m	aft draft in operation; d_{aft_ope}
d_{fore_ope}	11.2	m	fore draft in operation; d_{fore_ope}
Δ_{ope}	87357	MT	displacement in operation; Δ_{ope}

propeller type			
Item	Value	Unit	Remark
idpro	1	-	propeller type [1: FPP, 2: CPP]

- Operating draft, displacement*
- Propeller type
(Fixed-pitch / Controllable-pitch)

*It is also possible to enter the design full-load draft and design full-load displacement.

Cargo Weight Estimation for an Alternative-Fuel Vessel

input for plan using alternative fuel oil			
Item	Value	Unit	Remark
iselCa	1	-	Selector for calculation methods for the cargo weight: 1 : Input of voyage length 2 : Input of alternative fuel tank volume 3 : Input of alternative fuel cargo weight
iselF	1	-	Selector for alternative fuels (1:LNG, 2:LPG, 3:Ammonia, 4:Methanol, 5:Hydrogen, 6:Biofuel)
V_s	20	knot	Designated Ship speed; V_s
ρ_a	450	kg/m ³	Density of the alternative fuel; ρ_a
BHP	20924.7	kW	Main engine output at the designated speed BHP
a_a	5	%	Volume margin for an alternative fuel tank; a_a
a_f	5	%	Volume margin for an HFO tank; a_f
β_a	5	%	Unusable volume ratio required for the alternative fuel tank; β_a
β_f	5	%	Unusable volume ratio required for the HFO tank; β_f
Vol_{eqadd}	6026.98	m ³	Additional equipment volume required for an alternative fuel system from an HFO system; Vol_{eqadd}
C_{eqadd}	0	ton	Additional equipment weight required for an alternative fuel system from an HFO system; C_{eqadd}
Vol_{cf}	247416	m ³	Cargo volume (HFO ship); Vol_{cf}
$Cargo_f$	80000	ton	Cargo weight (HFO ship); $Cargo_f$
L_v	28800	NM	Maximum operating length on the alternative fuel tank; L_v

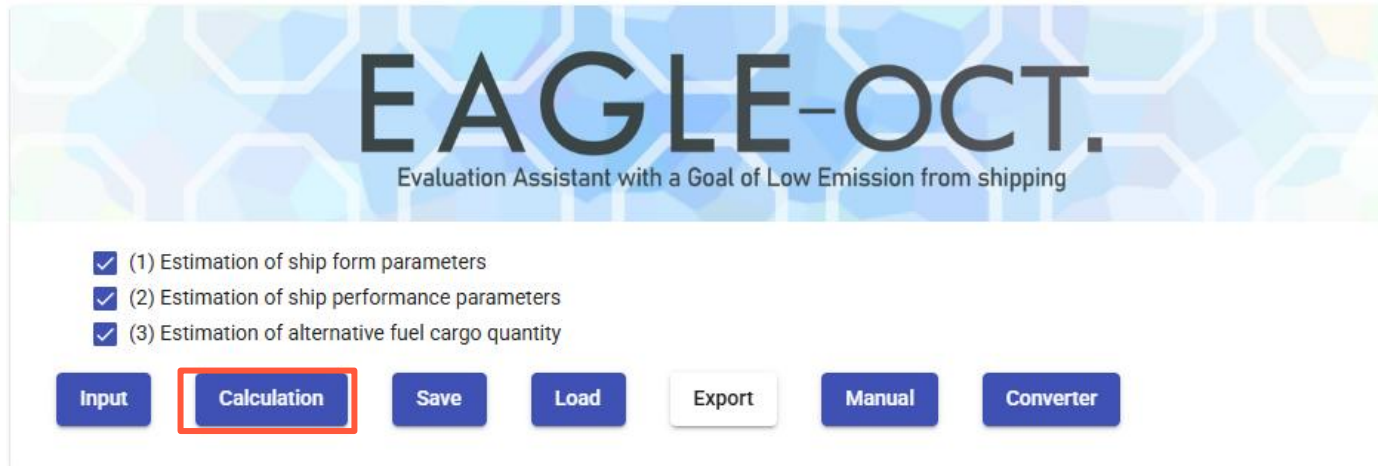
These inputs are displayed when Calculation Item (3) is selected.

The estimation is performed when converting a conventional heavy fuel oil (HFO) vessel to an alternative-fuel vessel.

Based on the cargo weight and cargo volume of the HFO vessel, the cargo quantity of the alternative-fuel vessel is estimated by taking fuel density and fuel consumption rate into account.

- Type of alternative fuel
- Designated ship speed and Engine Power
- Density of the alternative fuel
- Additional systems required for converting an HFO Vessel to an Alternative-Fuel Vessel (e.g., Fuel Gas Supply System)
- Cargo weight (HFO Vessel)
- Cargo volume (HFO Vessel)
- Maximum operating length

EAGLE-OCT.-web : Input、 Calculation



Once all required data has been entered, the Calculation button becomes active.→Click the Calculation button to run the calculation.

EAGLE-OCT.-web : Invalid Input

ship data

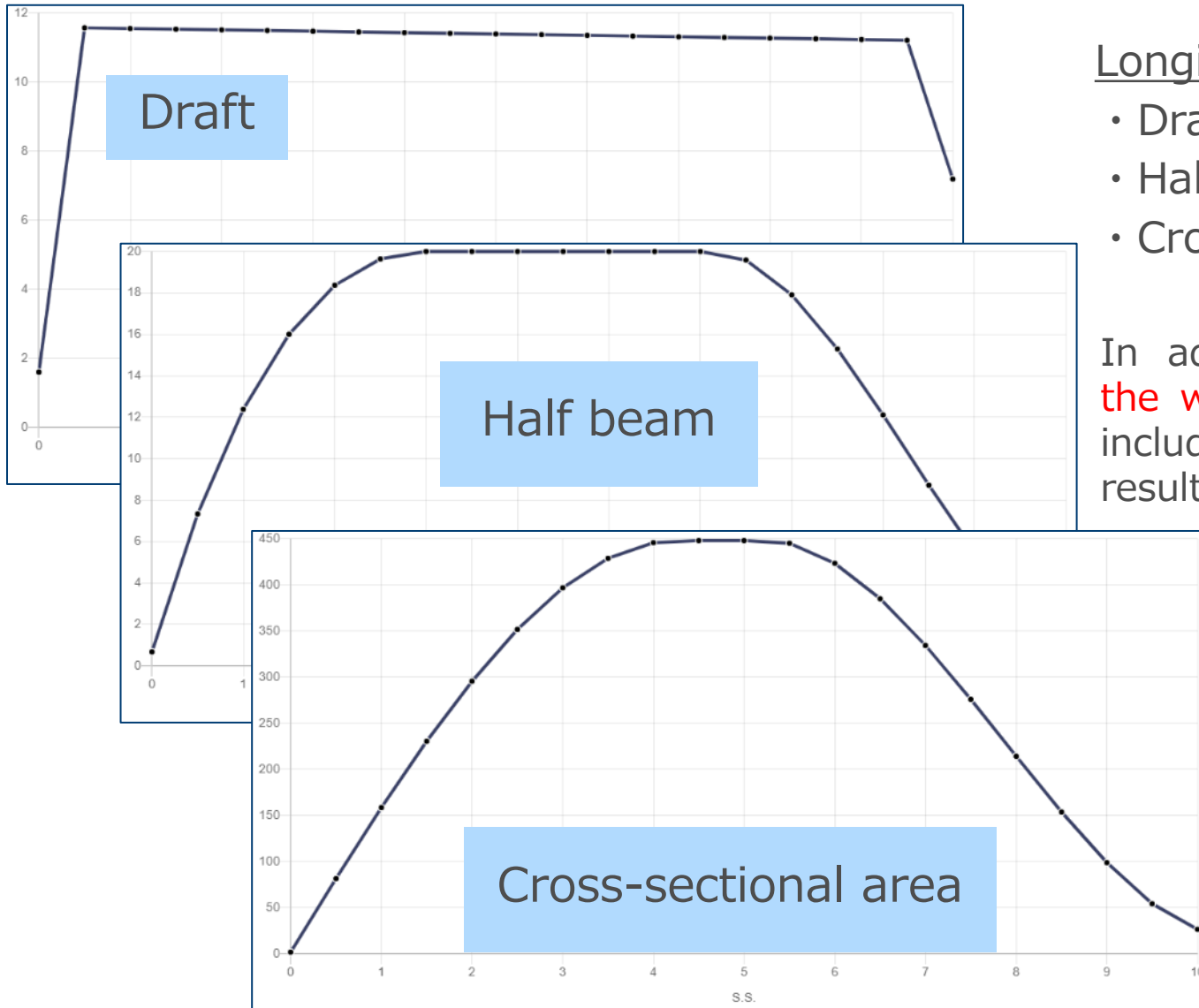
Item	Value	Unit	Remark
Builder	NMRI	-	builder
ID	100	-	ship ID number
Type	1	-	1:Container ship, 2:Pure Car Carrier, 3:Bulk Carrier, 4:Tanker
L_{OA}	310	m	length overall; L_{OA}
L_{pp}	-100	m	length perpendiculars; L_{pp}
B_{max}	40	m	maximum breadth; B_{max}
d_{mid_des}	14	m	mean draft in design condition; d_{mid_des}
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η_s	0.98	-	transmission efficiency; η_s
gear	1	-	gear ratio; gear(N_p =gear N_E)
N_{Elim}	90	rpm	engine revolution at MCR for setting the limit; N_{Elim}
MCR	45100	kW	maximum continuous rating of engine for setting the limit; MCR

Cells containing invalid input values are highlighted in red.

Calculations cannot be performed until the errors are corrected.

Calculation Results

EAGLE-OCT.-web : Output



Longitudinal Distribution

- Draft
- Half Breadth
- Cross-sectional area

In addition to the above, **the waterline shape** is also included in the output results.

EAGLE-OCT.-web : Output

ship parameter

Item	Value	Unit	Remark
Builder	NMRI	-	builder
ID	100	-	ship ID number
Voy. ID	3	-	voyage ID number
L_{ps}	299.32	m	length between fore position of water line and A.P./aft position of water line; L_{ps}
L_A	0	m	overhanging length at aft; L_A
X_G	-6.41	m	longitudinal position of the center of gravity (+ means fore from midship); X_G
OG	4.661	m	height of center of gravity above water line (+ means upside); OG
GM	4.036	m	transverse metacentric height; GM
T_ϕ	15.334	s	natural period of roll; T_ϕ
C_B	0.623	-	block coefficient; C_B
C_{pa}	0.6835	-	prismatic coefficient of aft part (from midship to A.P.); C_{pa}
C_{wa}	0.8203	-	water plane area coefficient of aft part (from midship to A.P.); C_{wa}
C_p	0.6344	-	prismatic coefficient; C_p
C_{vp}	0.8402	-	vertical prismatic coefficient; C_{vp}
S_I	13827.63	m ²	wetted surface area; S_I
l_{BK}	75	m	length of bilge keel; l_{BK}
b_{BK}	1.81	m	breadth of bilge keel; b_{BK}

rudder

Item	Value	Unit	Remark
x_R	-151.17	m	distance between center of gravity and rudder shaft (+ means fore from center of gravity); x_R
A_R	89.16	m ²	projector lateral area of rudders; A_R
H_R	11.6	m	rudder height; H_R
A_R	1.26	-	aspect ratio of rudder; A_R
rcf	9.18	m	chord length of rudder at shaft center; rcf

propeller

Item	Value	Unit	Remark
x_p	-144.79	m	longitudinal propeller position (+ means fore from midship); x_p
h_p	4.5	m	height of propeller shaft from base line; h_p

speed

Fn	Unit	Remark
[f]	-	number of Froude number
0.1358		
0.1728		
0.2098		
0.2469		

radius of gyration

Item	Value	Unit	Remark
k_{xx}/B_{max}	0.384	-	nondimensional roll radius of gyration; k_{xx}/B_{max}
k_{yy}/L_{ps}	0.251	-	nondimensional pitch radius of gyration; k_{yy}/L_{ps}
k_{zz}/L_{ps}	0.251	-	nondimensional yaw radius of gyration; k_{zz}/L_{ps}

cargo capacity for alternative fuel and related output

Item	Value	Unit	Remark
L_v	28800	NM	Maximum operating length on the alternative fuel tank; L_v
h	1440	hour	Maximum operating duration on the alternative fuel tank; h
Vol_{ca}	11281.7	m ³	Alternative fuel tank volume; Vol_{ca}
Vol_{cf}	6897.1	m ³	HFO tank volume; Vol_{cf}
Vol_{ca}	237004.3	m ³	Cargo volume (Alternative fuel); Vol_{ca}

cargo weight for alternative fuel

Item	Value	Unit	Remark
$Cargo_{dw}$	81529.4	ton	Maximum cargo weight for the alternative fuel ship based on the deadweight limit; $Cargo_{dw}$
$Cargo_{dv}$	76633.5	ton	Maximum cargo weight for the alternative fuel ship based on the cargo volume limit; $Cargo_{dv}$
$Cargo_{dmax}$	76633.5	ton	Maximum cargo weight for the alternative fuel ship; $Cargo_{dmax}$

Ship Form Parameters

- Block coefficient
- Longitudinal center of gravity
- Natural roll period
- Wetted surface area
- Bilge keel length and breadth

Rudder

- Rudder area and rudder position
- Rudder height and rudder aspect ratio

Propeller

- Propeller position
- Propeller shaft height

Radius of Gyration

Cargo Weight of an Alternative-Fuel Vessel

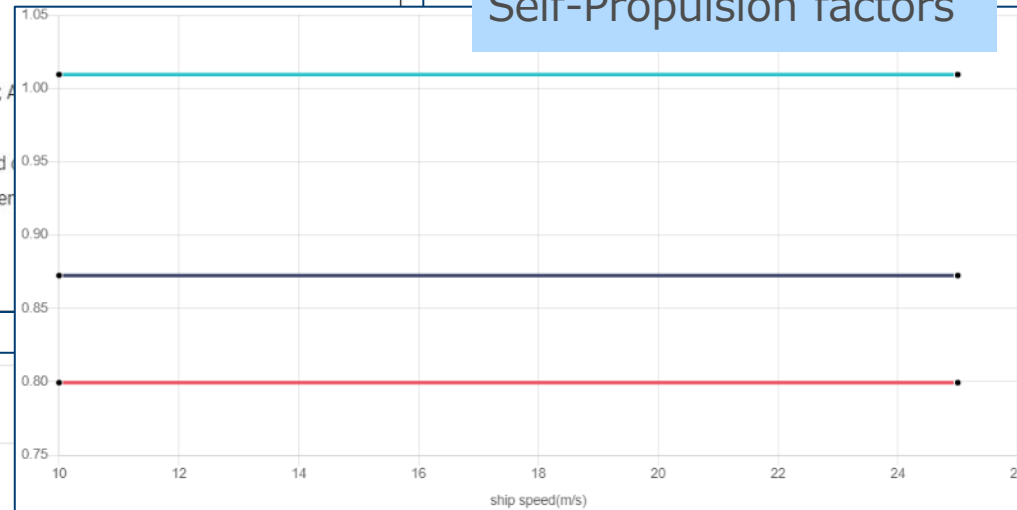
EAGLE-OCT.-web : Output

superstructure parameter

Item	Value	Unit	Remark
Builder	NMRI	-	builder
ID	100	-	ship ID number
Voy. ID	3	-	voyage ID number
A_T	1536.5804	m ²	projected transverse area above water line; A_T
A_L	8857.6576	m ²	projected lateral area above water line; A_L
A_{OD}	4673.2097	m ²	projected lateral area of superstructure and
$cdls$	-10.7301	m	distance from the midship section to the center of lateral area (from midship)
H_{BR}	41.7464	m	height to bridge top from water line; H_{BR}
H_C	14.7232	m	height to center of A_L from water line; H_C

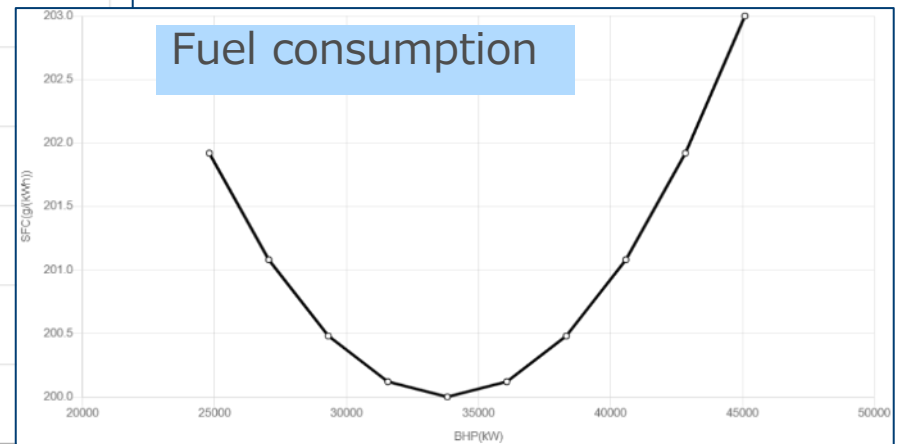
Superstructure parameters

Self-Propulsion factors



Propeller open water characteristics

Fuel consumption



EAGLE-OCT.-web : Output

(Calculation Option (3))

Cargo Carrying Capacity of an Alternative-Fuel Vessel

Intermediate Results

cargo capacity for alternative fuel and related output

Item	Value	Unit	Remark
L_V	28800	NM	Maximum operating length on the alternative fuel tank; L_V
h	1440	hour	Maximum operating duration on the alternative fuel tank; h
Vol_{ta}	11281.7	m ³	Alternative fuel tank volume; Vol_{ta}
Vol_{tf}	6897.1	m ³	HFO tank volume; Vol_{tf}
Vol_{ca}	237004.3	m ³	Cargo volume (Alternative fuel); Vol_{ca}

Cargo Carrying Capacity of an Alternative-Fuel Vessel

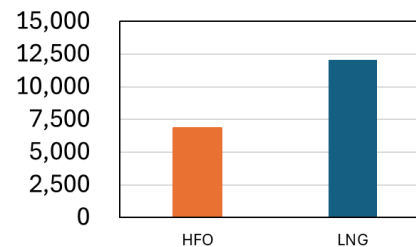
cargo weight for alternative fuel

Item	Value	Unit	Remark
$Cargo_{aw}$	81529.4	ton	Maximum cargo weight for the alternative fuel ship based on the deadweight limit; $Cargo_{aw}$
$Cargo_{av}$	76633.5	ton	Maximum cargo weight for the alternative fuel ship based on the cargo volume limit; $Cargo_{av}$
$Cargo_{amax}$	76633.5	ton	Maximum cargo weight for the alternative fuel ship; $Cargo_{amax}$

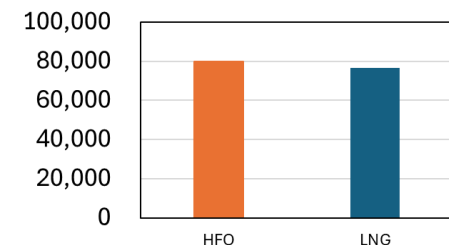
Calculation Example

*Graphs are not displayed within the application.

Fuel tank volume [m³]



Cargo weight [ton]

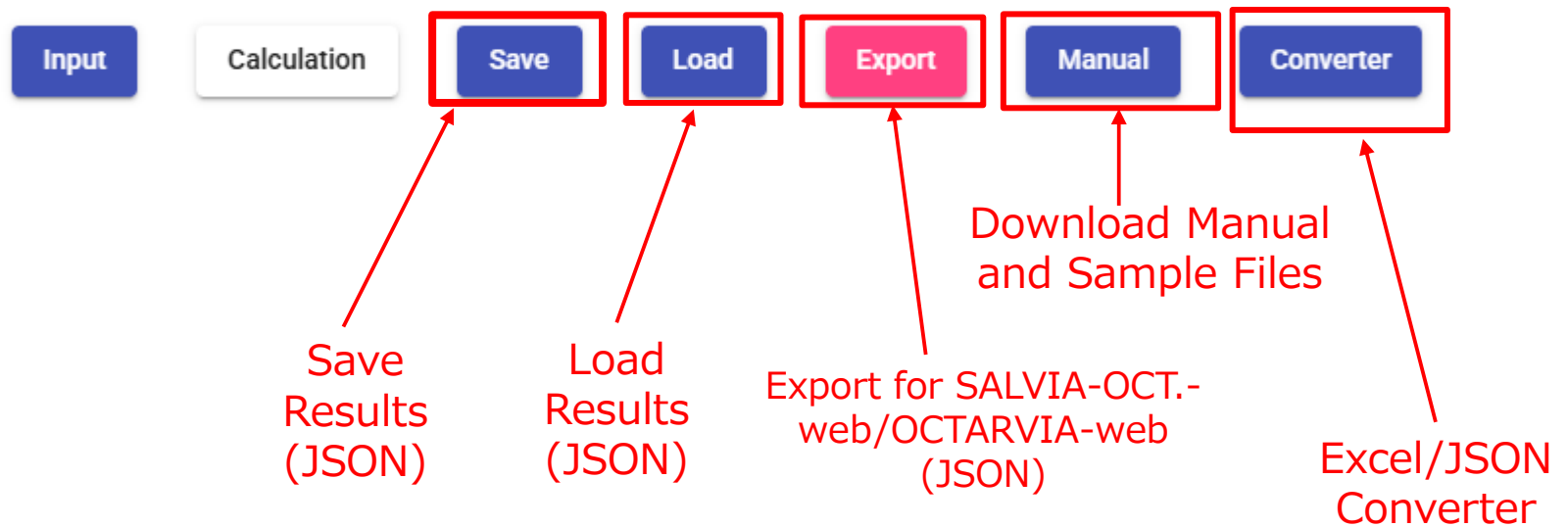


Others

EAGLE-OCT.-web :

Save/Load and Export Functions

Buttons on the Top tab



Automatically downloads the file to the local computer when clicked

Conversion of Save Data to Excel Format

- ✓ Save data can be converted to Excel format using the dedicated converter.
- ✓ Conversely, data entered in an Excel file can be converted to JSON format and then loaded into EAGLE-OCT.-web.

Converter for web application	
EAGLE-OCT.	SALVIA-OCT.
JSON to Excel	JSON to Excel
Excel to JSON	Excel to JSON
	
Ver. 1.0	

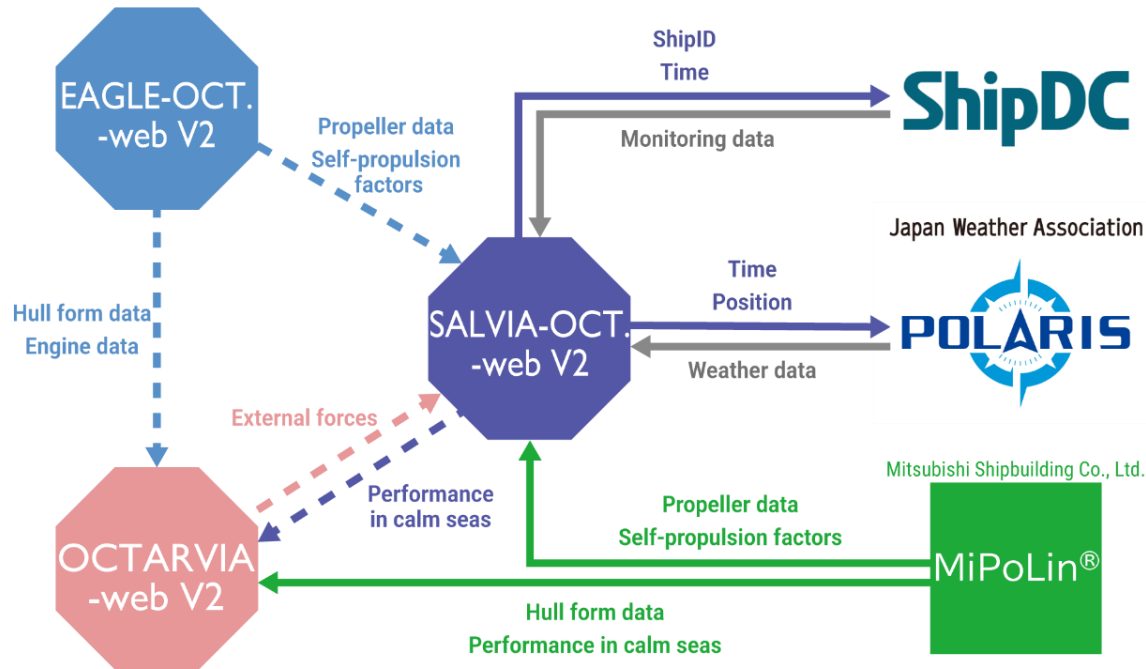
Convert web application
save data to Excel format

Convert Excel input data to
JSON format

Used with SALVIA-
OCT.-web

Dedicated Converter (Excel-based)

Application Integration



By integrating the applications, the following operations can be performed (examples)

- (1) Use **EAGLE-OCT.-web** to generate hull geometry data and hull/propeller performance data.
- (2) Using the results from (1), use **OCTARVIA-web** to calculate external force data such as added resistance due to winds and waves.
- (3) Using the results from (1) and (2), use **SALVIA-OCT.-web** to evaluate ship performance (e.g., ship speed, engine revolution and engine power) based on onboard monitoring data analysis.
- (4) Using the results from (1), (2), and (3), use **OCTARVIA-web** to evaluate ship performance under arbitrary weather and sea conditions, including ship speed and fuel consumption.