MEC-E1004 Principles of Naval Architecture

Tips for determining main dimensions

Determining main dimensions

Tips before going to calculations

Make sure you have sufficient data on the reference ship you chose such as the main dimensions and different weights (hull weight, outfitting weight, ….).

Also, data on the main machinery type to estimate the specific fuel consumption and the weight of fuel needed.

Make sure you have assumed the main shipowner's requirements; Deadweight and speed.

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Normand's number

- **Define the reference ship characteristics in the input cells**

- **Define the characteristics that remain unchanged in the new ship data input cells (In this case draught and CB are constant)**

- **You will find the new design data in the next table.**

Item	Reference Ship data
L (m)	150
B (m)	21
T (m)	9
CB	0,72
Δ (tonne)	20534,472
Hull weight W_H (tonne)	4000
Machinery Weight W_M (tonne)	1500
Outfitting weight W_O (tonne)	1000
Fuel weight W_F (tonne)	1500
Deadweight (tonne)	12534,472
L/B	7,142857143

Item	New Ship data
L (m)	176,0595955
B (m)	24,64834337
T (m)	9
CB	0,72
Δ (tonne)	28120,46132
Deadweight (tonne)	17534,472

Normand's no. (N)	1,517197863

Determining main dimensions

Tips before going to calculations

There are various statistical based methods to determine the main dimensions.

Be aware that among these methods, only one example is discussed here.

you should check any constraints due to an owner requirements, port constraints, or any other constraints on the dimensions.

Statistical methods are usually used for conventional designs and types of ships.

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Statistical Method

- Define the main owner requirements, the deadweight to displacement ratio, and the required main section of the ship in the input cells.

- Define the characteristics that remain unchanged in the new ship data input cells (In this case draught and CB are constant).

- You will find the new ship data in this table.

Ship's Main Characteristics	
Δ	27027,03
LPP	167,04
B	25,70
T	7,34
D	12,37
C_B	0,837
C_M	0,995
C_P	0,841
C_{WP}	0,899

Inputs	
Deadweight	20000
DWT/Δ	0,74
V (Knots)	12
Density of water (t/m3)	1,025
Hull Section type	V-section