UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCAE.Initiative
(Open Source Computer Aided Engineering)

Open Source CAE for Ship Design and Analysis
Introduction to FreeShip Plus

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Outline

1. What is FreeShip Plus?
2. A Simple Design Session
3. A Simple Analysis Session
4. Other Functions
5. Hands On Session

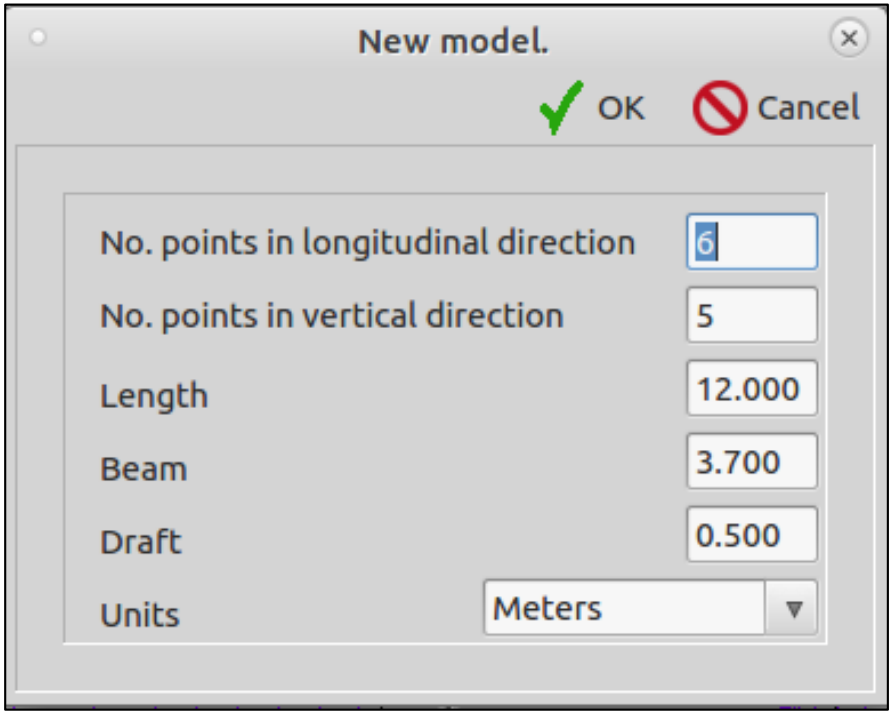
What is FreeShip Plus?

- FreeShip Plus :
  - an open source surface-modelling program based on subdivision surfaces and intended for the design of ships.
  - The program is free-software:

    You can redistribute it or modify it under the terms of the GNU General Public License as published by the Free Software Foundation.

A Simple Design Session

1) How to start new model:

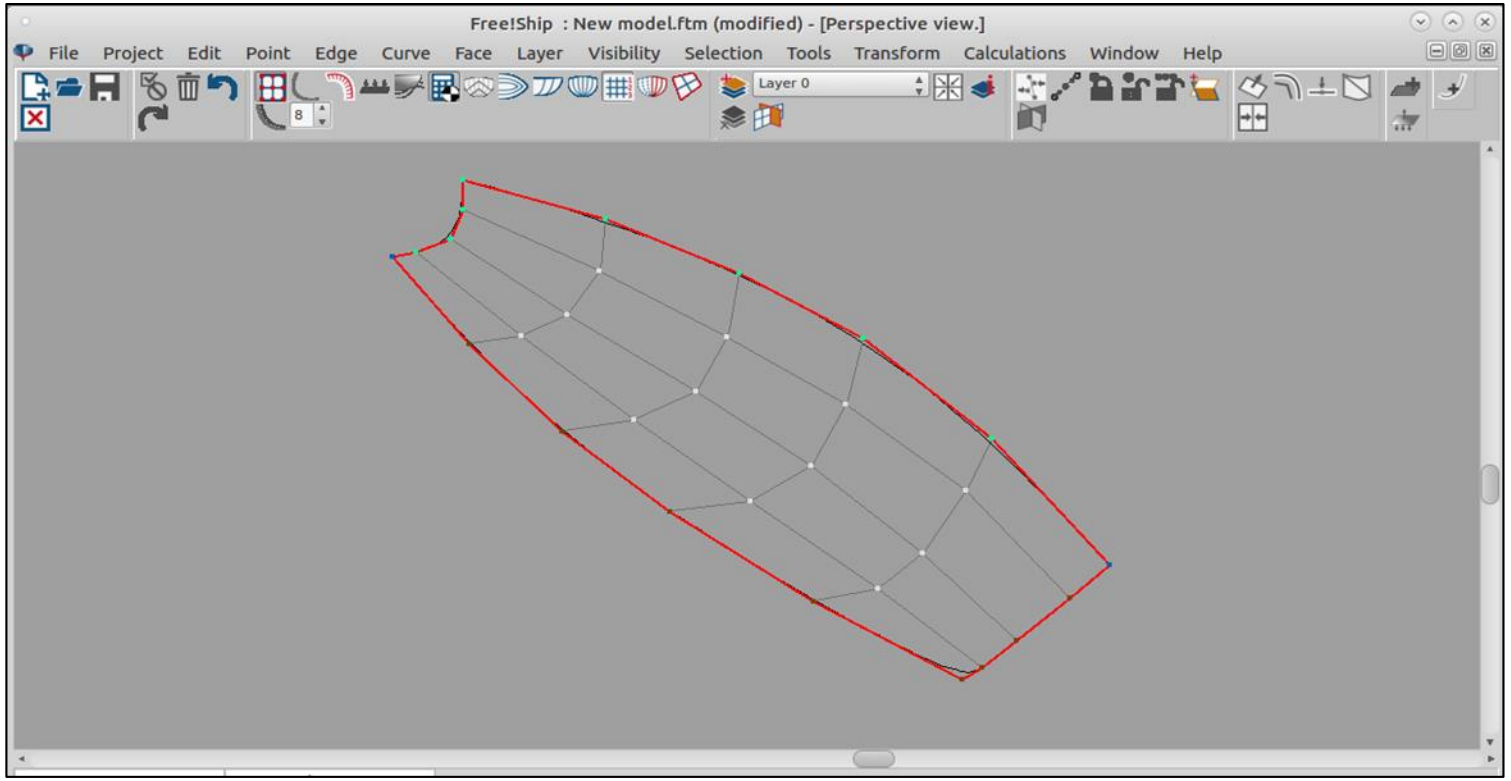


The following dialog is shown :

- No. points in longitudinal direction represents no of stations which start with the transom and the last one the stem.
- No. points in vertical direction represent waterlines which start from keel line, the last one for the sheer line.

A Simple Design Session

- The Perspective view should look now something like that:

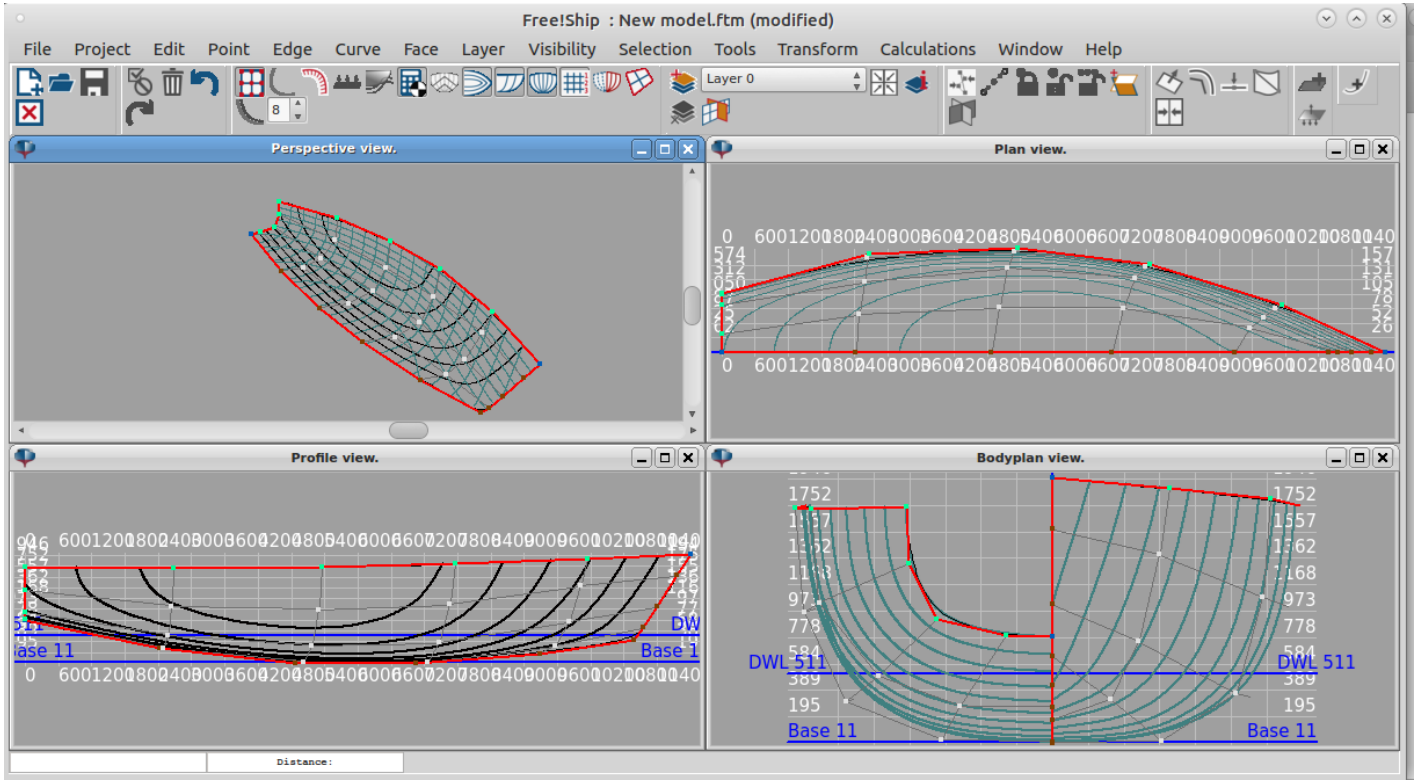


A Simple Design Session

2) Open the existing model:

   - click the open command in the main menu.

3) View window in FreeShip Plus.



A Simple Design Session

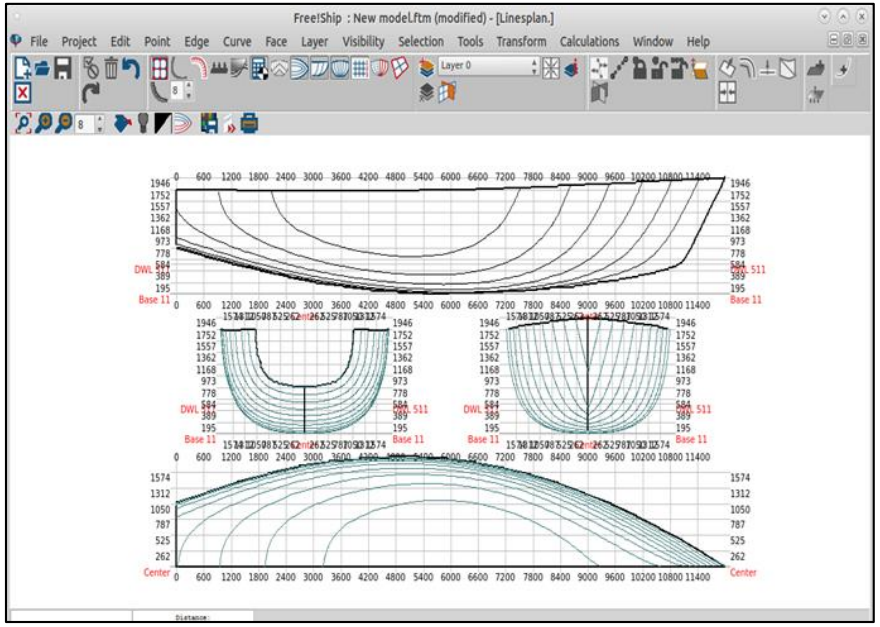
4) Import and export file in FreeShip Plus.

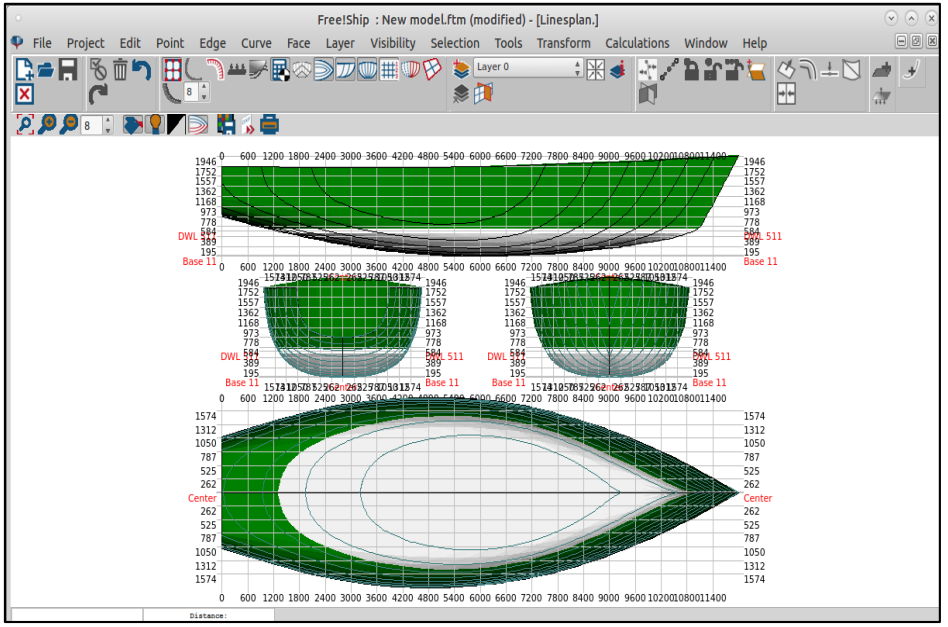
File types	Import	Export
Part	√	√
Carlson .hul file	√	
Import/Export .fef file	√	√
Surface	√	
Importing chines	√	
VRML	√	
PolyCad files	√	
Michlet waves	√	√
IGES		√
DXF 3D mesh		√
DXF 2D polylines		√
DXF 3D polylines		√
STL file		√

A Simple Design Session

5) LinesPlan.

- FreeShip Plus also enables the user to view the complete formatted linesplan of the ship.





A Simple Design Session

6) Tools

- Check model :
  - can check the model for any inconsistencies, and corrects most of them automatically.
- Remove negative:
  - Sometimes, when a hull is imported, the geometry of both sides of the ship is present. FreeShip Plus only needs the port side. This option removes all faces from the model that are completely on the starboard side.

A Simple Design Session

- Remove unused points:
  - This can be used to remove all unused points from the model.
- Import markers:
  - Markers are curves that can be added to the model as a reference. For example the offsets of another design can be imported as markers.
- Delete markers:
  - This deletes all markers from the model. It speaks for itself that this option is disabled if there are no markers added to the model.

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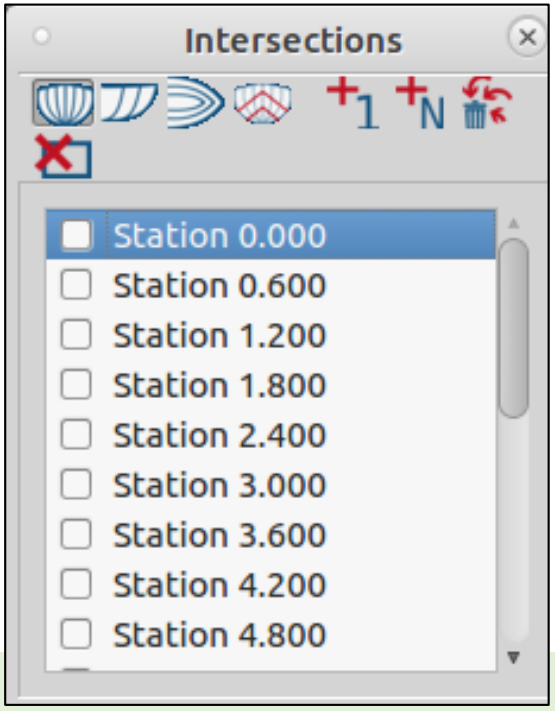
- Add cylinder:
  - This option lets you add a cylinder. You can specify the start point, endpoint, radius and number of points in the dialog that appears. You can use the cylinder for example to add a bow thruster to your model.

A Simple Analysis Session

- Calculations in FreeShip Plus.

  a) intersection curves :

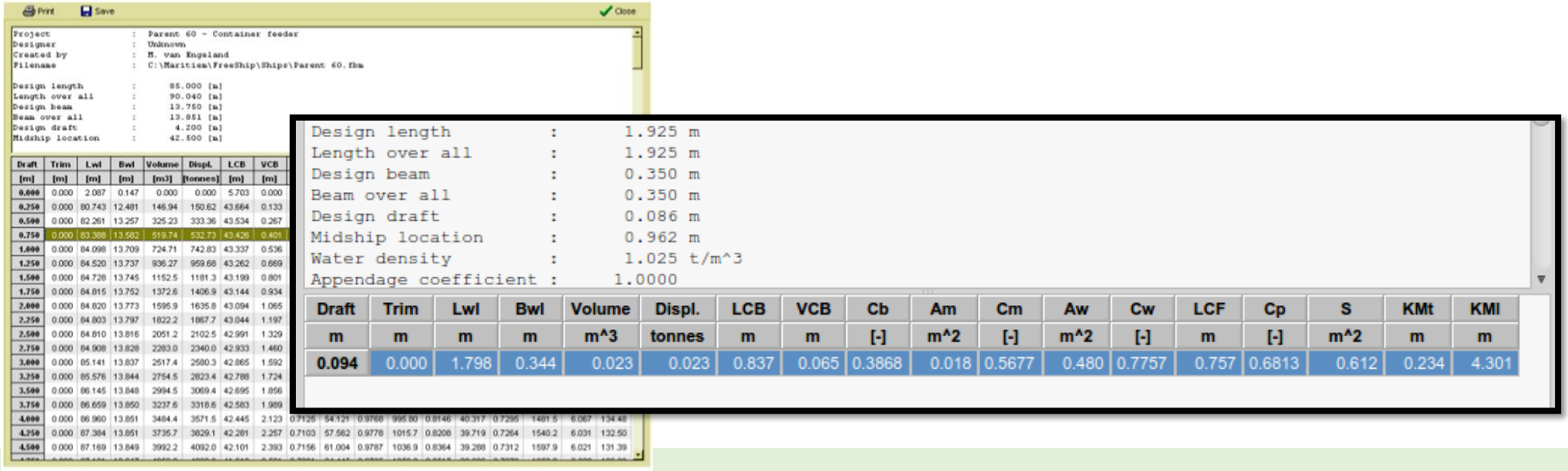
  - Intersection curves such as stations, buttocks, waterlines and diagonals are calculated from the model.



A Simple Analysis Session

b) Design hydrostatics:

- This option is used to perform hydrostatic calculations at a range of drafts. A trim may also be specified. The results can be saved to a text file. These properties are calculated for both sides of the ship and may be used for example to estimate the weight of the hull.



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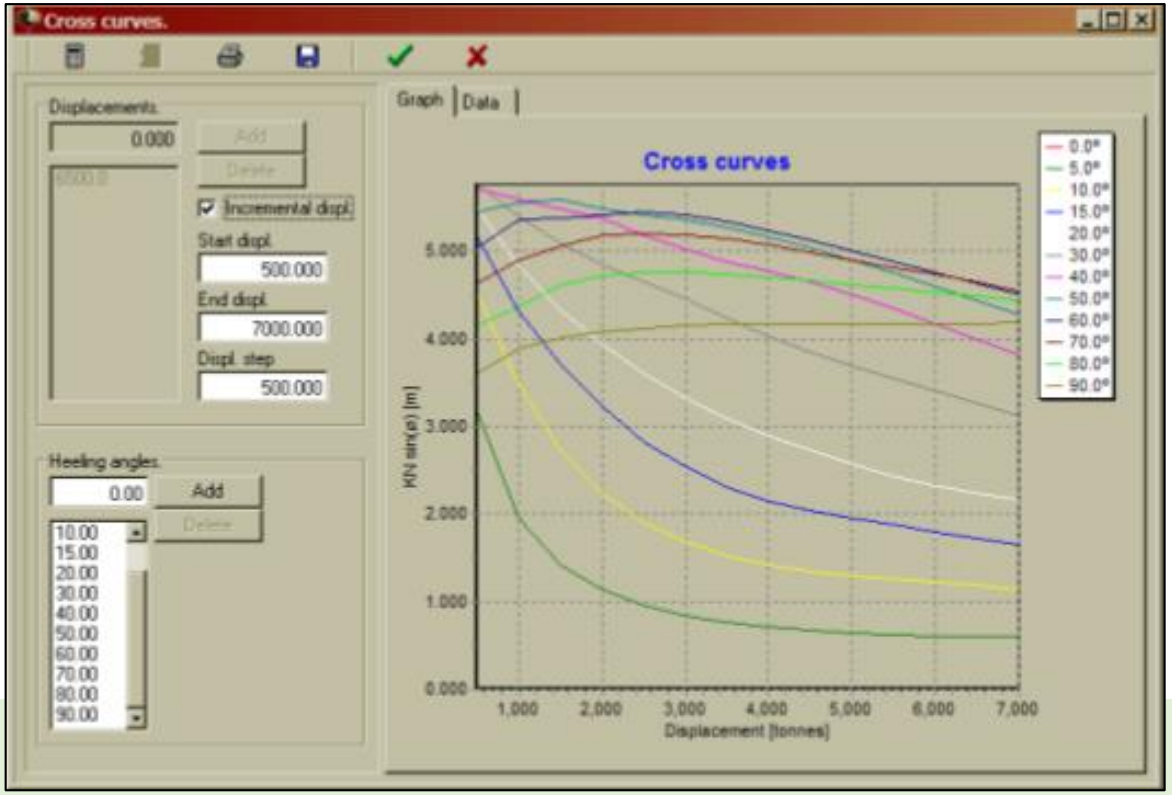
c) Cross curves:

- Stability calculations are provided in the form of cross curves. For a number of heeling angles and displacements KN sin(ø) is calculated and presented in a graph and table.



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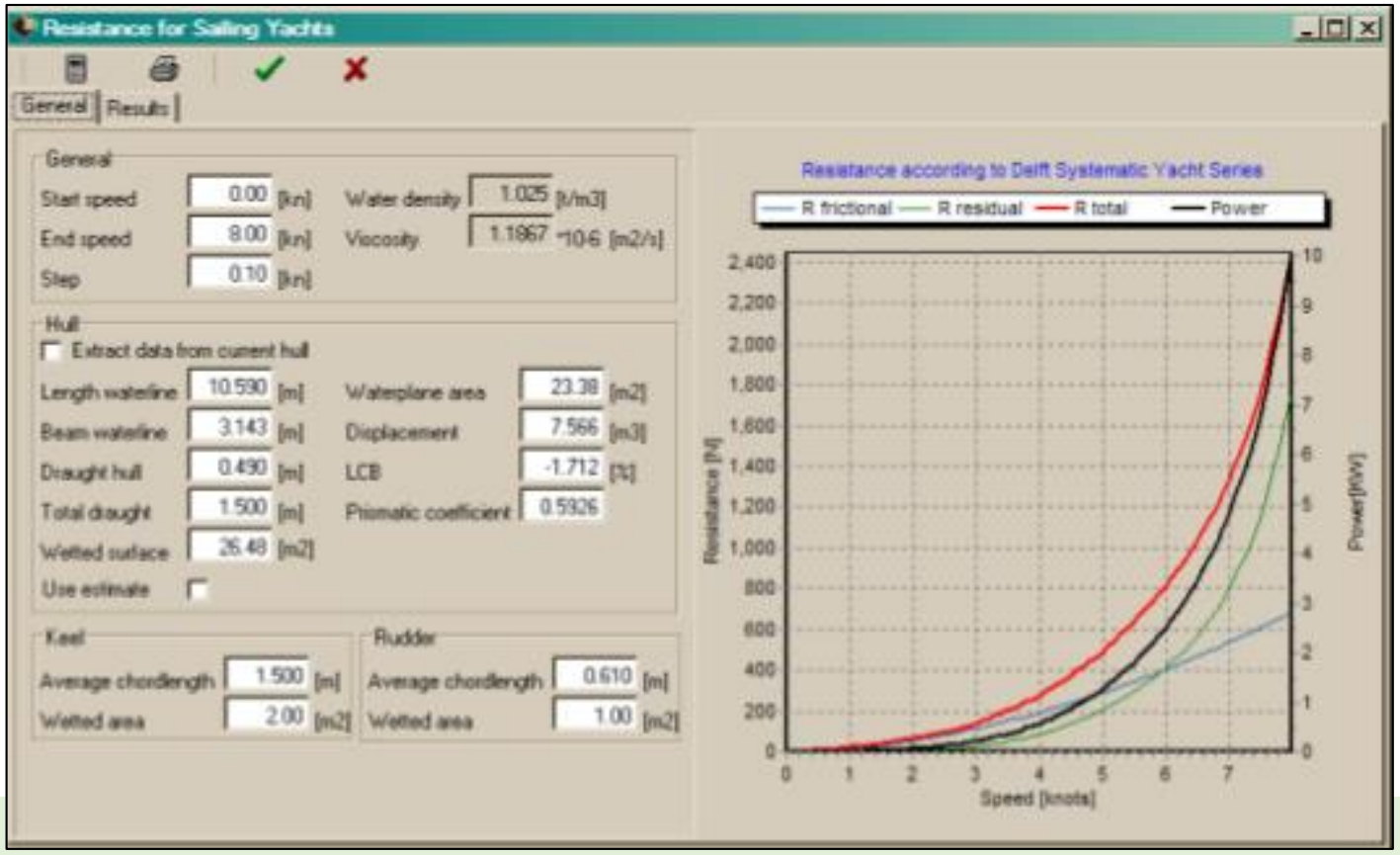
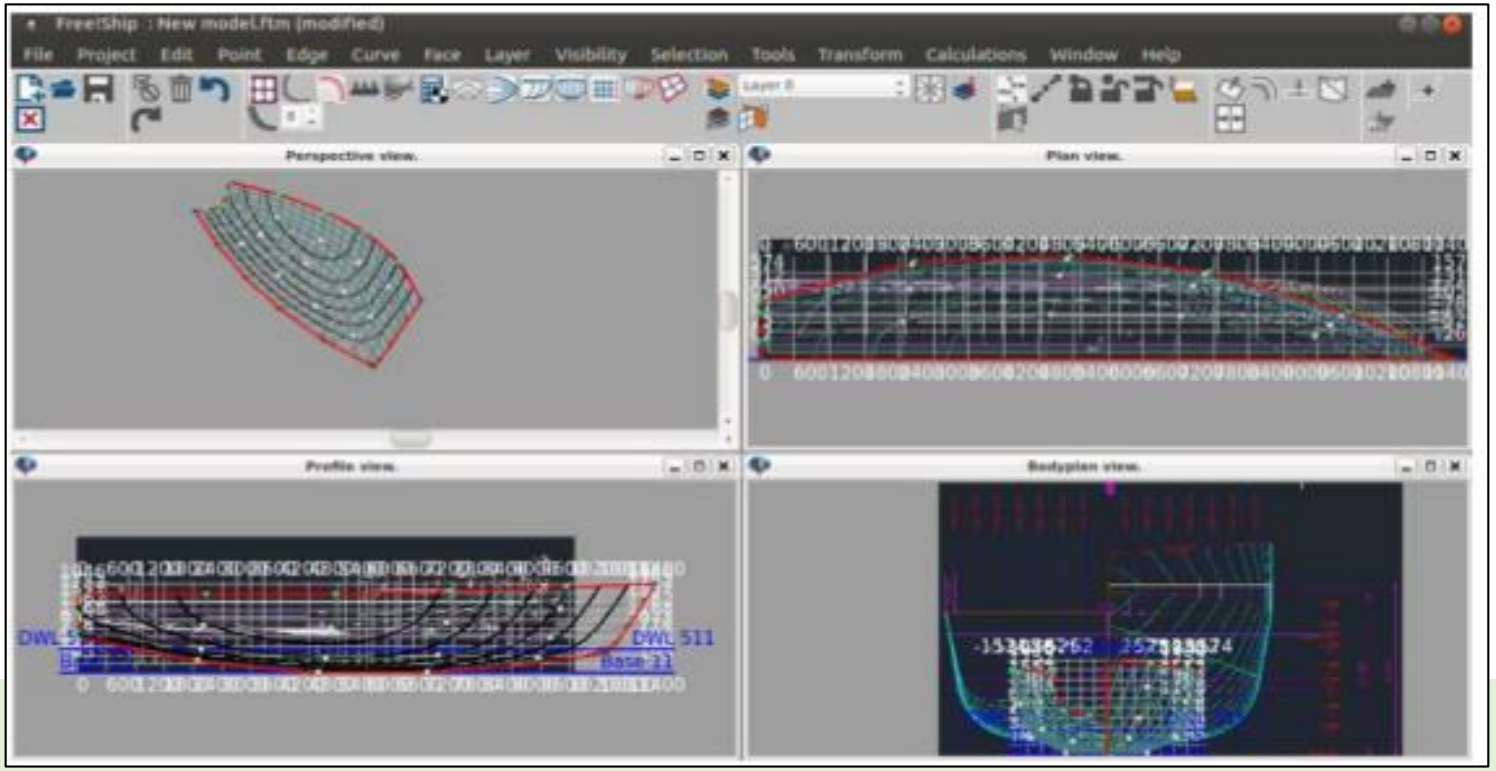
d) Resistance calculations:

- The graph displays 4 resistance curves. The first three are for frictional resistance, residual resistance and the total resistance.



Other Functionalities

- Background images.
  - FreeShip Plus has the ability to show images on the background of your model. This functionality is particularly convenient if you have an existing linesplan on paper and want to recreate the lines in FreeShip Plus.



Advantages of FreeShip Plus

1) High quality surfacing.
2) User friendly interface.
3) Comprehensive ship analysis.
4) Surface trimming in FreeShip Plus is a simple point and click process.
5) No license costs.

Hands On Session

Short example on modelling a ship model in FreeShip Plus.

T H A N K Y O U