C L A I M S

1. A method for determining the optimum trim and draft for a vessel in ballast and laden conditions using the analysis of historic vessel data for the vessel being optimised, the method comprising the steps of:

- collecting operational data from the vessel for one or more of its previous voyages, with the operational data comprising one or more operational parameters or data tags;

- filtering out error and noise created by a chosen source of the operational data;

- filtering out an effect of adverse weather, hull fouling and/or other conditions which have been found to decrease the accuracy of the process;

- processing the operational data that has been filtered, by placing the filtered operational data into classes or bins of increasing size of speed, draft and trim to determine the average power for each historic speed, draft and trim condition; and

- producing a database of optimum draft and trim conditions based on the processed operational data, and providing the database to an operator or as an input to an automatic draft and trim optimisation system .

2. The method of claim 1, the step of filtering out error and noise including the deletion of data that falls outside of an upper threshold and/or a lower threshold to remove one or more values that are zero and/or not physically possible.

3. The method of any one of the previous claims, further comprising:

- calculating a predicted fuel consumption for each speed, draft and trim condition based on the database of optimum draft and trim conditions; and

- comparing the predicted fuel consumption with an achieved fuel consumption for the vessel to determine savings achieved using information on a current fuel price.

4. The method of any one of the previous claims, where the operational parameters include one or more of vessel draft, trim, fuel consumption, date and time of sample collected, speed over ground, speed through water, main engine power,

main engine rpm, true wind speed, relative wind angle, engine fuel mass flow rate, fuel consumption, depth of water, shaft rpm, and time since last hull clean.

5. The method of claim 1, including the use of Artificial Neural Networks and Regression Tree Models to further improve the accuracy of the model.

6. The method of claim 1, including the step of displaying real-time results to the Captain or an automatic draft and trim control system using a computer software or code, and/or a graphical display.

7. The method of claim 6, where the graphical display provides the optimum draft and trim for the vessel to the Captain to alter the current condition of the vessel.

8. The method of claim 1, where each individual step is combined into a work flow which is installed onto a computer or chip to automatically run the analysis.

9. The method of claim 8, including the step of continually measuring the current vessel speed to further select the optimum draft and trim.

10. The method of claim 5, including the step of using Artificial Neural Networks to analyse and provide draft, trim and speed optimisation for a whole fleet, the fleet comprising multiple substantially similar or identical vessels.

11. The method of claim 1, the method including the step of using data on fuel quality and main engine mechanical faults to improve the predicted fuel consumption for savings estimation.

12. System, comprising a tool for implementing the method of claim 1.