

Trim Optimization Module

Kyma Ship Performance

KSP Trim is an optional software module that can be integrated with the standard KSP system.

The purpose of the KSP Trim module is to provide the vessel operator with a practical tool for establishing the optimum trim for the vessel at any load and draft condition.

Optimum trim is defined as the trim where a vessel will have the best speed through the water at a given draft and load and is, accordingly, an extremely important parameter with regard to vessel overall efficiency and fuel consumption.

The optimum trim is related to the physical hull design, and will be the same for identical vessels at equal operating conditions.



Kyma AS
Åsamyrane 88 B
N-5116 ULSET
Bergen, NORWAY
Tel : +47 55530014
sales@kyma.no

www.kyma.no

Establish Trim

The principle applied for establishing optimum trim by the KSP Trim module is to use the KSP system's capabilities for data logging and report generation to carry out a series of trials at various loads and drafts.

Each series of trials will find the optimum trim level for the current power and draft. This is done by performing runs at various angles of trim whilst keeping the shaft power and mean draft constant. During each run, the vessel speed through water is recorded in order to determine which trim level gives the highest vessel speed.

The summarized results of each run are added to the table as they are completed. When all the trials are complete, the results of the trial series are evaluated, as shown in table below:

The screenshot shows the KSP Trim software interface. On the left, there are four navigation buttons: 'Establish trim', 'Trim planner', 'Manage data', and 'Settings'. The main area displays a 'Trial Test Completed!' message with the optimum trim value of **-0.6 m**. Below this is a table of trial results:

Trial #	Date/Time	Trim	Ship Speed	Shaft Power	Draft Mean	Wind Speed, True
1	23 May 2014 11:15	-2.0 m	14.4 knot	13000 kW	14.0 m	5.1 knot
2	23 May 2014 11:19	-1.0 m	14.5 knot	13000 kW	14.0 m	5.1 knot
3	23 May 2014 11:24	0.0 m	14.7 knot	13000 kW	14.0 m	5.5 knot
4	23 May 2014 11:27	1.0 m	14.3 knot	13000 kW	14.0 m	5.5 knot
5	23 May 2014 11:31	2.0 m	13.4 knot	13000 kW	14.0 m	4.5 knot

Below the table is a graph titled 'Optimum Trim for current Draft Mean and Shaft Power'. The y-axis is 'Ship Speed [knot]' ranging from 12.5 to 16.0. The x-axis is 'Trim [m]' ranging from -2.0 to 2.0. A green shaded area indicates the optimum trim range from -1.6 m to 0.4 m. The peak speed is 14.7 knot at 0.0 m trim. A 'Delete data' button is located above the table. On the right side, there are 'Save' and 'Cancel' buttons, and a 'Help' button at the bottom right.

Trim planner

When the optimal trim has been established, the system can be used as a 'Trim Planner'. The desired shaft power and mean draft values are entered in the 'Trim Planner' and the optimal trim at this condition will be displayed.

Manage data

All data from each series of trials is stored in the system and can easily be accessed at any time. The optimum trim database can be exported to be used for sister vessels within the same class.