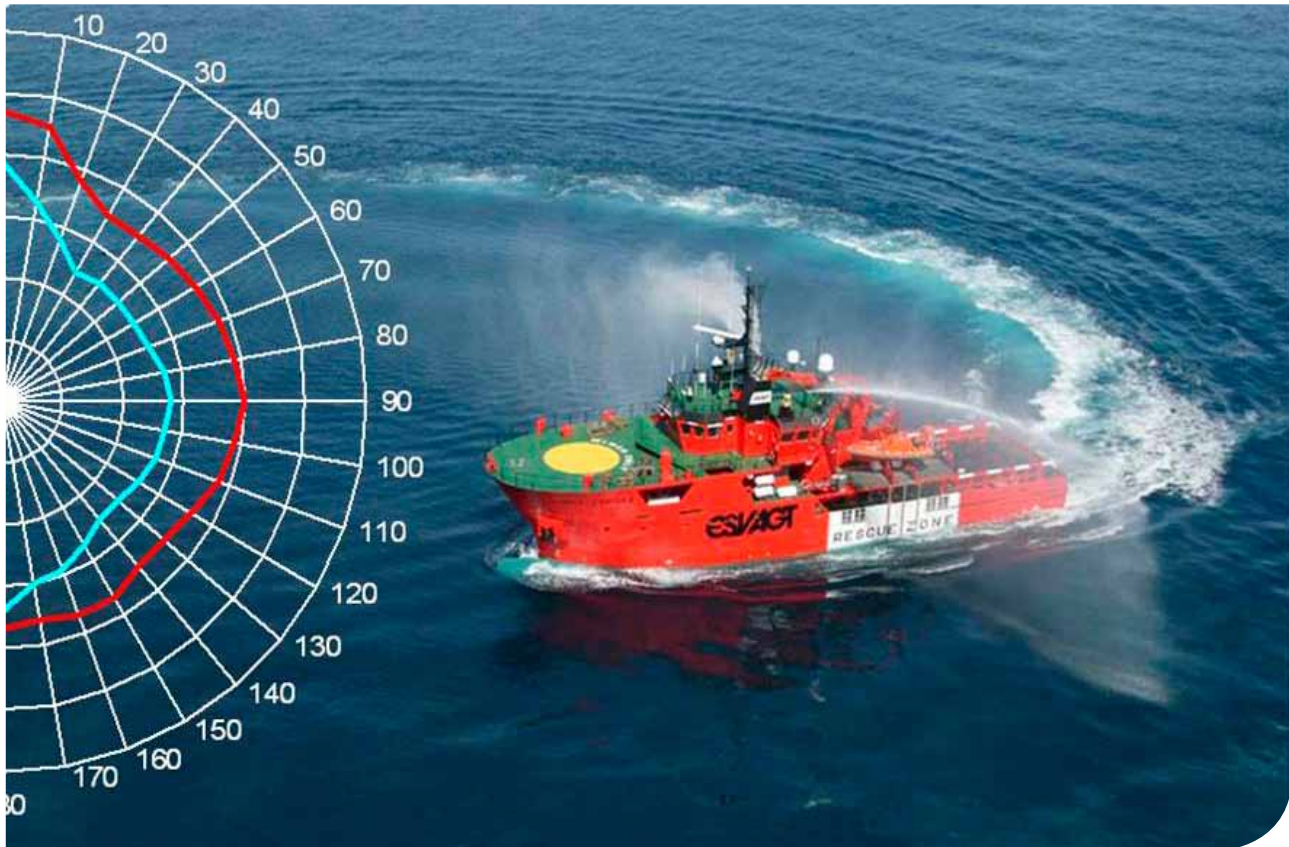


DPLab - Holding Capability Module



FORCE Technology, the Division for Maritime Industry (DMI) have been involved in numerous Dynamic Positioning (DP) projects regularly since the early 1990's. These projects cover the range from numerical predictions to full blown model tests on ships and semisubmersibles.

Introduction

Embarking on a new project with a dynamically positioned ship or platform immediately poses the following three questions, once the site has been determined:

A) Is station keeping possible under the anticipated conditions? B) What sizes of thrusters are required, and where do we install them to maximize our station keeping? And C) How are the thrusters best utilised?

These three problems do not, of course, have independent solutions, rather a common solution solving all three must be found. FORCE Technology has developed the Holding Capability Module for the DPLab software for in-house use or as software sold in a package with wind & current pre-

dictions or wind tunnel model tests. The program follows the recommendations of IMCA M 140.

Holding Capability Basics

The tool performs static calculations, balancing the available thrust and the environmental forces as described in the following.

The holding capability is defined as the limiting environmental (arising from wind, current and waves) forces that can be balanced by the vessel using its propulsive systems in an optimal way.

Failure Mode Analysis (FMA)

Once the key data for the vessel or platform has been assembled and entered into the program, various analyses can be performed.

One of the key aspects for any operator of a vessel with DP capability is to evaluate the ability to stay at position in case of failure on one or more units. This task can easily be carried out by DPLab providing the client with a rapid evaluation of the failures and their effects on DP capability.

DPLab Input Data

The basic required inputs to DPLab are as follows:

- Vessel Geometry
- Wind and current force coefficients
- 2nd order wave drift forces
- Thruster sizes and positions
- Thruster efficiencies (thruster-thruster interaction and thruster-hull interaction).

Normally wind and current data are obtained from predictions based upon our database or from exact wind tunnel tests on the specific project. 2nd order wave drift forces are either imported from the clients own seakeeping data (RAO's from WAMIT or similar) or computed utilising FORCE Technology 3D panel seakeeping code Omega.

Thruster information is based upon either generic units and their position on the hull, data from thruster vendor or model test on the exact project.

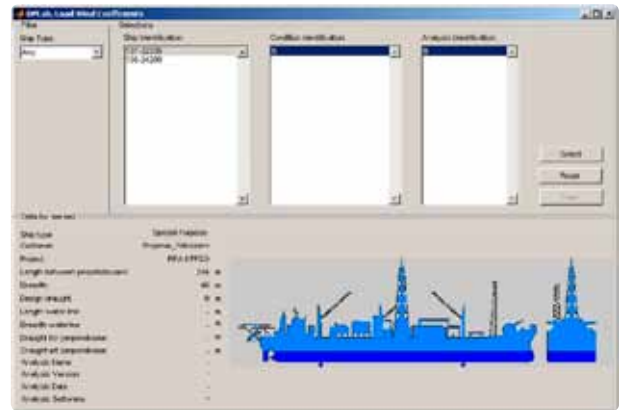
DPLab Output

The results of the DPLab program are presented in a range of graphs and diagrams such as polar diagrams of limiting environmental conditions. For external use, the results can be exported and used in other programs or spreadsheets.

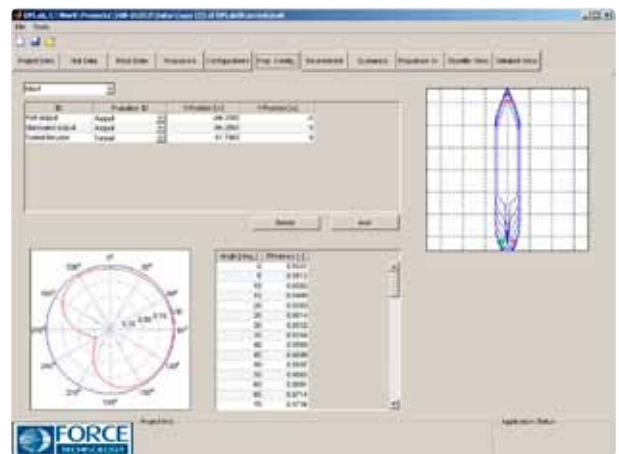
Once a configuration and relevant scenario has been prepared and analysed, the system auto generates a report with settings and results. In case that numerous configurations are analysed, the results are also compiled in comparison plots and tables for easy review and conclusions.

DPLab References

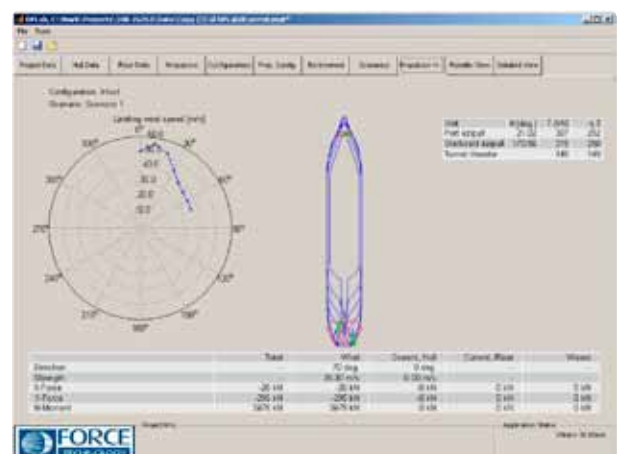
The DPLab program has been used for assignments for a range of ship types including drilling vessels, semisubmersibles, crane vessels, special purpose vessels, AHTS etc. The list of clients includes major shipyards, operators and consultancy companies worldwide.



Easy access to database of wind and current loads



Database search or individual definition of thrusters and their efficiency



Intuitive inspection of solution during the computation or as post analysis

Further information

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