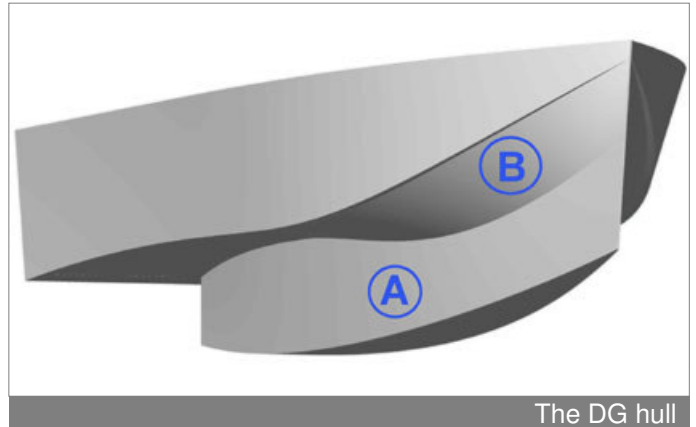


The Innovation:

Displacement Glider (DG)

The "Displacement Glider" (DG) is a unique concept which combines a displacement keel (A) and planing surfaces (B). In contrast to the common displacement hull, more than 3/4 of displacement occurs in the keel. The two wave systems of (A) and (B) interfere with each other which leads to a general lower total resistance and creates a significantly reduced wash respectively.



Performance comparison

DG versus standard displacement and planing boat

The following diagram shows the performance advantage within a speed range from displacing to planing using the example of the DG-Prototype (Loa=14,45 m).

As the diagram illustrates, DG achieves in the transition speed range significantly higher speeds than both the displacement and planing boat given the same power input. The DG-effect is valid throughout a wide speed range: for a boat of 14,6 m it is 9 to 19 knots.

The DG prototype achieves a maximum advantage over other hulls of approximately minus 30 per cent of power at 16 knots.

DG hull design provides significant savings. Model tests and recent seatrials suggest a possible reduction up to 30 % on operating costs and investment in main engine.

Benefits

Advantages of the DG hull:

Minimized Resistance:

- particularly in the hump range less total resistance than conventional hull design
- leads to reduced installed power requirement and significant less fuel consumption
- wider range of operation with same fuel capacity
- higher speed achieved - well above the critical displacement speed up to planing
- substantially reduced wash addressing increasingly stringent environmental regulations

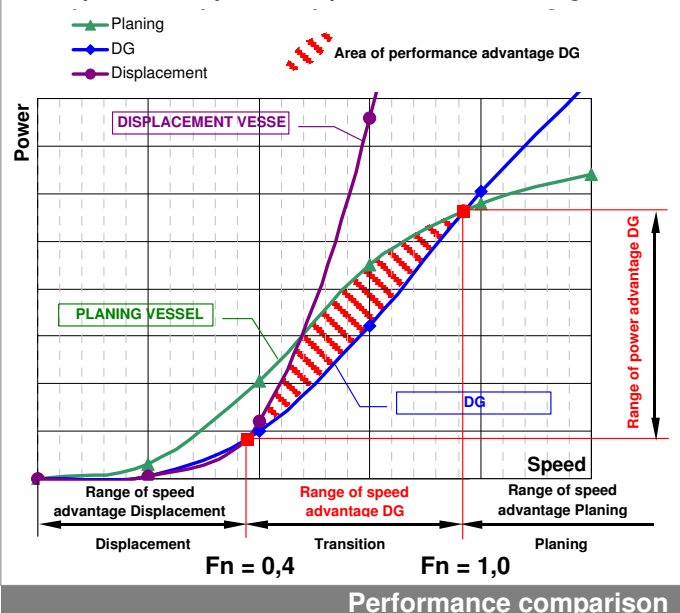
Seaworthiness:

- high directional stability and low leeway
- dramatically lower rolling and slamming amplitudes resulting from damping influence of the keel
- higher stability from lower center of gravity provided by unique keel design (increased volume and area enables location of main engine, batteries, tank directly in the keel) and large moment of inertia of the water line area
- higher obtainable speeds in rough sea than common planing boats
- enhanced maneuverability in rough seas

Cost savings and layout of hull:

- smaller i.e. less expensive engine can deliver same performance
- significantly more usable space in hull (engine, battery, tank and other ballast fit directly in the keel freeing up significant amount of space for cargo etc.)
- additional space can be utilized more efficiently, because of level area above the gliding surfaces

Shaft power over speed of Displacement - DG - Planing Vessel



Alternative Concepts

Higher speed is usually achieved by two categories of hull design.

Superfast ships: Hydrofoils or SES (SURFACE EFFECT SHIPS). Disadvantage is the large additional investment for devices like: skirt foils, fans, etc.

Fast displacement vessel: extreme slender lines plan (SUPER SLENDER HULL). Disadvantage is decreased stability or even stability problems.

Ships using the DG design avoid these weaknesses and are easy to build. DG performance is based on the combination of the displacement keel and planing surfaces. Therefore neither increased investment nor reduced stability occur.

Applications

DG can be applied at ships operating in a speed range from displacing to planing, such as:

- work boats
- fishing boats
- ferries, watertaxis and waterbuses
- offshore supply vessels
- fast freight vessels
- navy vessels

Furthermore all areas in industry seeking energy and cost savings from hull designs and applications with the requirement of minimized wash.



The DG prototype

Loa	14,45 m	Lwl	14,14 m
Width	4,29 m	Displacem.	13,32 m ³
Draft	1,20 m	Power	288 kW



Offer

Our offer is addressed to shipyards, whose customers are demanding fast displacement vessels and low wash solutions.

We offer:

- calculation of performance (power, speed) and main dimensions for given displacement
- lines plan on a license basis as a
 - single license
 - license for a series
 - exclusive license for time and/or area

The DG hull form is protected by patents.

For more information please contact us or visit our website:



ALSPHERE

Alsphere Engineering GmbH

Biberstrasse 11/8

A-1010 Vienna/Austria

Phone : +43-1-51671-0

+421-2-69201301

Mobile: +421-905-812771

E-mail peterman@alsphere.at

www.alsphere.at