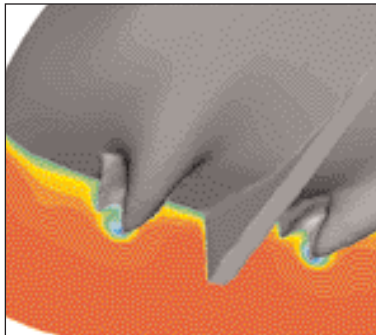


PARNASSOS

to tackle larger class hulls

MARIN is pleased to announce that its program PARNASSOS is now able to handle a larger variety of hull forms.



A cross section of the axial velocity field near the propeller plane showing the wake field structure.
Courtesy Ballast Nedam.

MARIN's program PARNASSOS is familiar to many in the industry. At present PARNASSOS is regularly used to predict the viscous flow field around single-screw ships, such as container vessels, tankers and bulk carriers. In this role it has proven to be a valuable design tool, especially with respect to the elimination of flow separation and the improvement of wake fields.

Industry interest

Spurred on by interest in the industry for ship designs based on the twin-skeg or twin-gondola concept, MARIN's CFD (Computational Fluid Dynamics) group extended the capabilities of PARNASSOS to include these geometrically more complex hull forms. The option to simulate these flows numerically became possible in December 2000 following the completion of the multi-block version of the MARIN viscous-flow solver. This enhanced flexibility considerably as the calculation domain around the hull could then be split into several sub-regions - a prerequisite for this kind of calculation.

Twin-gondola afterbodies

Recently the program has been used to analyse the flow field around a variety of twin-gondola afterbodies. Since viscous-flow computations predict the entire velocity and pressure field around the hull, they provide the opportunity to study a number of relevant flow phenomena in detail.

Both the pressure distribution and the limiting streamline pattern on the hull (the numerical equivalent of a paint test) were used to optimise the orientation of gondolas and head boxes relative to the flow direction. The computed velocity field was used to study the influence of strong vortex formation around the gondola on the structure of the wake field.

Interest to dredger market

This development is of special interest for those involved in the dredger market, as flow in shallow water has a profound effect on dredger performance. PARNASSOS has been used to study the effect of water depth on the flow around the hull and to eliminate the occurrence of flow separation and the resulting poor inflow to the propeller at an early stage in the design process. Again the use of CFD in the design process has proven itself and enabled another step forward.

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