

Marine
Propulsion
Software
Since 1984

What is NavCad?

NavCad is a Windows software tool for the prediction and analysis of vessel speed and power performance. It also provides for the selection of suitable propulsion system components – engines, gears and propellers.

Who should use NavCad?

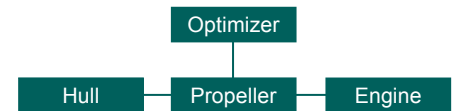
Naval architects, marine engineers, hydrodynamicists and researchers in shipyards, design consultancies, equipment manufacturers, navies and research institutions all rely on NavCad.

What vessels can I evaluate with NavCad?

NavCad can be used for virtually every type of displacement, semi-displacement and planing craft, river barge, sailboat and catamaran. Towing and free-running analyses are supported, as are open and ducted propellers.

What makes NavCad different?

NavCad is unlike any resistance and propeller program offered by other developers. Not limited to a few routines for the prediction of one or two aspects of performance, NavCad provides a complete platform for the steady-state equilibrium analysis of performance from hull to engine. Features such as the minimum hull drag analysis provide designers with powerful tools to optimize hull forms.



Once hull data has been entered and a resistance prediction built, you can analyze and optimize your hull with the Minimum hull drag analysis. You define search ranges and intervals for significant data items (e.g., length, beam, LCB), and NavCad predicts the drag for the configurations and then ranks it. The configuration with the minimum drag is displayed at the top of the list, with the difference from minimum displayed in percent of drag. The calculation also has the ability to review a compromise analysis, using a weighted average of two speeds.

How accurate is NavCad?

Prediction accuracy is insured by offering A] the largest available suite of prediction methods (over two dozen for bare-hull resistance alone), B] compatible components between methods, C] calculations built from contemporary state-of-the-art methodologies, D] a complete analysis environment where critical components (like shallow water resistance, for example) cannot be forgotten and E] dedicated evaluation, testing and internal R&D (see MacPherson, D.M., Reliable Performance Prediction: Techniques Using a Personal computer, SNAME Marine Technology, Vol. 30, No. 4, October 1993).

In addition, NavCad contains HydroComp's Method Expert prediction method ranking system. This feature takes your vessel data and ranks all monohull prediction methods based on speed regime, ranges of hull parameters and the availability of hull details (i.e., if waterplane coefficient or trim, for example, has been entered and is used in the method). It also takes into account HydroComp's extensive knowledge about prediction method behavior and reliability. Warnings are raised if a method has shown poor results for the given vessel information.

Method	Speed	Hull	Details	Comments
Jin RBDH method	OK	OK	OK	For general use.
Holtrop-1984 method	Check	OK	OK	May tend to underpredict.
DeGroot motor-boat	OK	Check	OK	For general use.
Mercier semi-planing	OK	Check	Missing	Known errors with hard chine.
Basic displ/semi	Fail	OK		Average hull prediction.
Univ Denmark method	Fail	Check	OK	General purpose for early design.
Oortmessen method	Fail	Check	OK	Widely used.
Delft series I	Fail	Check	OK	For general use.
Delft series I/II	Fail	Check	OK	For general use.
Delft series II	Fail	Check	OK	For general use.
Delft series I/II/III	Fail	Check	OK	For general use.

What do I need to run NavCad?

NavCad is a Windows program for use with Windows 3.x, 95 or NT. Approximately 5 MB of hard disk space is required.

NAVCAD:

The industry's most advanced software for ship performance and propulsion

What kind of support is available from HydroComp?

NavCad includes both on-line and printed User's Guides and Help systems, which can generally answer most questions. In addition, 90 days free maintenance and telephone/fax/e-mail support are included with the purchase. The annual maintenance and support subscription offered by HydroComp will insure that you will continue to receive all updates and in-depth technical support. HydroComp also maintains an extensive library of technical references that can be accessed by users. A quarterly newsletter provides useful hints and suggestions, and on-site or seminar training is available.

Can I use NavCad with my other software?

NavCad is suitable for use either as a stand-alone tool or in conjunction with other naval architectural design software. NavCad's simple parametric hull data makes entry of vessel details very easy. NavCad also supports the IMSA open hull data transfer standard (IDF) so that hull data developed in a design or stability program can be exported to NavCad. NavCad even can be run from within other design programs with design data passed to NavCad on start up. After completing an analysis in NavCad, the new optimized hull parameters can be returned to the host program. HydroComp is working with key marine software developers to allow NavCad to be run from their systems with hull data automatically created and transferred.

In much the same way as NavCad can be run from other programs, you can launch other programs from within NavCad. Standard ASCII-based NavCad job files are used as the data exchange format.

```

Application : Resistance      l-1-1995                               Page 1
Hull type   : Displacement   File name: fast78m.nc3
Description : Fast 78 M displacement vessel

Analysis parameters
[]Bare-hull : Holtrop-1984 method []Appendage : Holtrop 1988 method
Technique : Prediction      []Wind      :
Cf type   : ITTC             []Seam     :
Align to  :                  []Channel  :
File      : ITTC             []Barge    :
Correlation allow (Ca): 0.00038 []Met      :
[]Roughness:
[]3-D corr : Form factor (1-k): 1.2108 []Speed dependent correction

Prediction results
Val  Fn  Rn  Cf  [Cform]  [CW]  Cr  Ct
-----
8.00  0.149  2.70e8  0.001813  0.000382  0.002233  0.002615  0.004808
10.00  0.186  3.38e8  0.001760  0.000371  0.002157  0.002528  0.004667
12.00  0.223  4.05e8  0.001718  0.000362  0.002183  0.002546  0.004643
14.00  0.260  4.73e8  0.001683  0.000355  0.002343  0.002638  0.004761
16.00  0.298  5.41e8  0.001654  0.000349  0.002554  0.002903  0.004937
18.00  0.335  6.08e8  0.001630  0.000344  0.002613  0.002956  0.004966
20.00  0.372  6.76e8  0.001608  0.000339  0.003034  0.003393  0.005281
22.00  0.409  7.43e8  0.001589  0.000335  0.003394  0.004269  0.006238
Kts
-----
Val  Rv/W  Rz/W  Rshare/W  Rv  Rz  Rshare  PRshare
-----
8.00  0.0111  0.00130  0.00240  20.29  23.76  43.68  179.8
10.00  0.02168  0.00197  0.00363  39.62  35.88  66.26  340.9
14.00  0.03358  0.00412  0.00727  65.20  75.08  132.49  594.2
16.00  0.05009  0.00579  0.00984  92.83  105.50  199.44  1477.0
18.00  0.06659  0.00746  0.01253  120.37  135.97  228.43  2135.1
20.00  0.08951  0.01057  0.01676  173.42  192.67  305.55  3143.8
22.00  0.01482  0.01609  0.02350  270.32  293.33  428.59  4850.7
Kts
-----
Val  Rapp  Rwind  Rseas  Rchan  Rother  Rtotal  RBtotal
-----
6.00  3.10  0.00  0.00  0.00  2.30  31.12  96.1
8.00  5.33  0.00  0.00  0.00  3.91  52.89  217.7
10.00  8.04  0.00  0.00  0.00  5.93  80.22  412.7
12.00  11.30  0.00  0.00  0.00  8.49  114.71  708.2
14.00  15.08  0.00  0.00  0.00  11.85  159.42  1148.2
16.00  19.35  0.00  0.00  0.00  16.05  214.85  1768.4
18.00  24.13  0.00  0.00  0.00  20.43  272.97  2527.7
20.00  29.39  0.00  0.00  0.00  27.33  342.37  3727.3
22.00  35.13  0.00  0.00  0.00  36.33  502.06  5682.2
Kts
-----
----- NavCad Version 3 (c) 1995 HydroComp, Inc. -----

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What do I receive with NavCad?

NavCad includes a 300+ page User's Guide and technical reference. Contact HydroComp for pricing, options and availability. Multiple copy discounts and network versions are available.

Who uses NavCad?

As of the end of 2000, NavCad could be found running in over 350 of the most respected companies from more than 40 different countries.

For license and ordering information, please contact:

HydroComp, Inc.
13 Jenkins Court
Suite 200
Durham, NH 03824 USA
Tel [603] 868-3344
Fax [603] 868-3366
E-mail
info@hydrocompinc.com

To order, please contact HydroComp, Inc. or an authorized dealer: