



NavCad®

“The scope of NAVCAD is enormous, and should be a required acquisition of all design offices...” THE NAVAL ARCHITECT

What is NavCad?

NavCad is a 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. NavCad's basic capabilities can be summarized as:

- Bare-hull resistance
- Added resistances
- Design guidance for drag reduction
- Hull-propulsor interaction
- Steady-state propulsion analysis
- Propeller selection
- Supplemental analyses

Who should use NavCad?

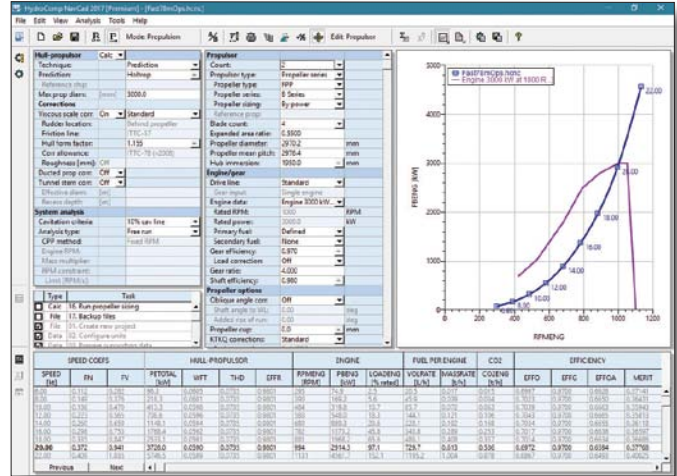
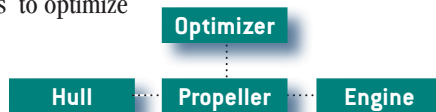
Naval architects, marine engineers, hydrodynamicists and researchers in shipyards, design consultancies, equipment manufacturers, navies and research institutions all rely on NavCad.

What vessels can I evaluate with NavCad?

NavCad can be used for virtually every type of displacement, semi-displacement and planing craft, barge, sailboat, catamaran – even submarine and SWATH. Towing and free-running analyses are supported, as are open and ducted propellers, waterjets, and advanced propulsors (such as contra-rotating propellers).

What makes NavCad different?

NavCad is unlike any other resistance and propeller program. 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.



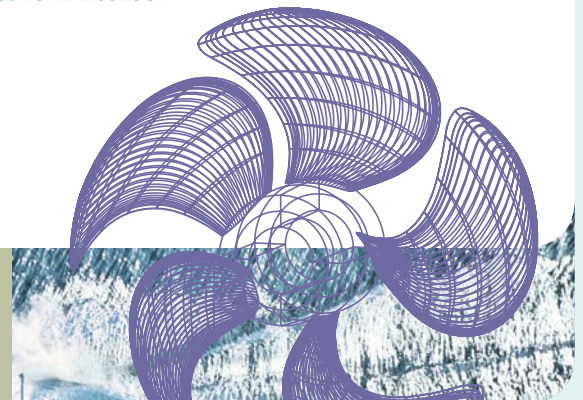
How accurate is NavCad?

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, e) user guidance such as the Method Expert prediction method ranking system, and f) dedicated validation, testing and internal R&D.

What is the Premium Edition?

NavCad Premium is a “power user” feature upgrade (www.navcad-premium.com). The Premium Edition includes the following capabilities and upgrades:

- Scripting (macro) API
- Connect as resistance and propulsion solver
- Operating modes analysis
- Wave theory resistance prediction
- Dual-fuel and emission predictions
- Floating network license





Technical Specifications

Vessel Types

Monohulls and catamarans • Displacement • Semi-displacement • Planing

Applications

Ocean-going merchant and naval vessels • Small ships and work boats • Motor and sailing yachts • High-performance vehicles • River barge trains • AUV/ROV propulsion

Calculation Protocols

CT-based ITTC-78 and user-defined • Equilibrium-trim planing analysis • Resistance prediction • Propulsion analysis • Propeller sizing

Resistance Prediction

Over three-dozen bare-hull methods • Alignment to resistance model tests and sea trials • Added drag for appendages, wind, seas, shallow water • Roughness effects

Propulsion Analysis

Prediction of hull-propulsor coefficients • Analysis by free-run, towing, bollard, or acceleration • Determination of thrust, power, efficiency, fuel rate • Extensive cavitation review

Propulsor Options

Open, ducted, surface-piercing, and cycloidal propellers • Waterjets • Shaft angle effects • Cupping • Controllable-pitch • Cavitation breakdown • Alignment to propeller model tests • Roughness effects

Propeller Sizing

Diameter • Pitch • Blade area ratio • Reduction gear ratio

Integrated Calculation Spreadsheet

Evaluate arbitrary conditions • Analyze sea trials • Validate model tests

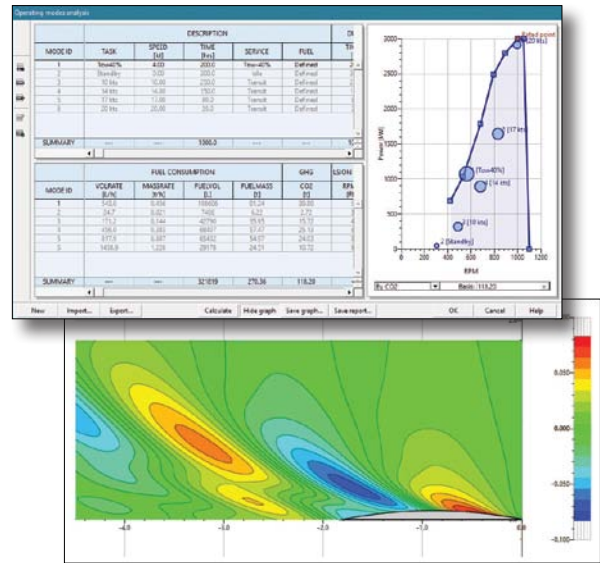
Supplemental Analyses

Hydroacoustics • Sinkage and trim • Synchronous pitching • Barge train resistance • Body-of-revolution submersibles

Design Guidance

Minimum drag analysis • Optimum trim

NavCad: The industry's most effective software for ship performance and propulsion



NavCad includes:

- Largest collection of methods
- Extensive algorithm validation
- True equilibrium planing analysis
- Advanced propulsors such as waterjets
- Parametric optimization utilities
- Correlation to model-test results
- Comprehensive propeller analysis
- Prediction of shallow water effects



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