



PropElements™

What Is HydroComp PropElements?

HydroComp *PropElements* is software for detail propeller design and analysis.

Who Should Use PropElements?

Propeller specialists will find *PropElements* an essential addition to their propeller design toolbox, but it also was developed to elegantly address the system level hydrodynamic needs of naval architects.

What Propellers Can I Evaluate With PropElements?

PropElements is for the design and analysis of open or ducted sub-cavitating propellers. A variety of blade foil types are available (including NACA66mod, Bi-circular, Segmental, and a Generic style). For ducted propellers, *PropElements* supports standard nozzle styles (such as 19A, 33 and 37), and you can create custom performance files for special nozzle designs.

Does PropElements Consider The Vessel?

Through definition of the radial wake distribution, *PropElements* provides the ability to uniquely capture the performance of a particular propeller on a particular vessel. For a propeller design, a true "wake-adapted" optimal solution can be delivered.

How Does PropElements Work?

PropElements is a unique implementation of a vortex lattice lifting line code. More capable than a simple academic lifting line utility, *PropElements* offers a fully-viscous, scalable solution made possible through in-house R&D and our experience in hybrid empirical-numerical hydrodynamics.

Is PropElements Accurate?

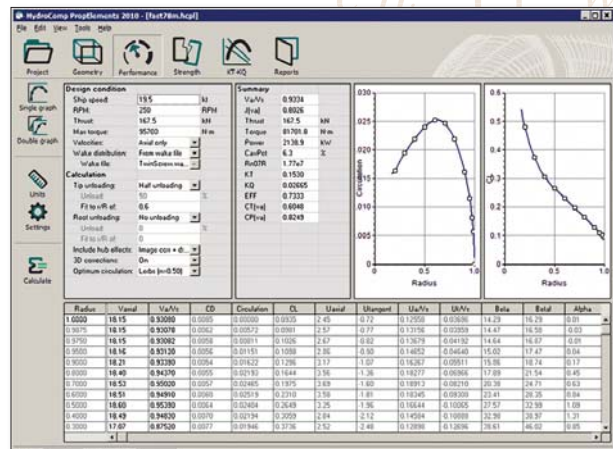
Quantitative validation against test data is a crucial step in the development process at HydroComp. Extensive validations studies for *PropElements* have confirmed that it is unmatched in prediction accuracy.

How Are Data And Reports Managed In PropElements?

Data can be manually developed using *PropElements'* own editing functions. Existing design data can also be transferred by spreadsheet copy-paste, or by editing the text-based *PropElements* design file. Output is provided in both reports and plots.

Detail propeller design and analysis

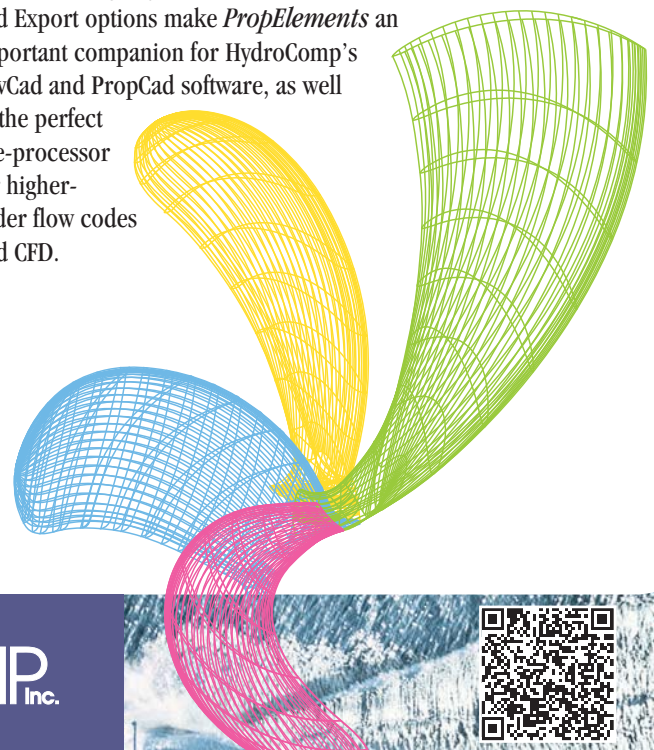
$$\tan(\beta_i) = \frac{\tan(\beta)}{c_n} \left(\frac{1-w}{1-w'} \right)^{1/2}$$



Sample PropElements "Performance" Screen

Does PropElements Interface With Other Software?

A design can also be shared with other software for a complete design cycle solution. A number of Import and Export options make *PropElements* an important companion for HydroComp's NavCad and PropCad software, as well as the perfect pre-processor for higher-order flow codes and CFD.





PropElements™

$$\tan(\beta_i) = \frac{\tan(\beta)}{c \eta_i} \left(\frac{1-w}{1-w_i} \right)^{1/2}$$

Technical Specifications

Calculation Groups

Project • Geometry • Performance • Strength • KT-KQ

Water Types

Fresh • Salt • Brackish • Custom

Solve For

Pitch + Camber (ideal) • Pitch • Thrust

Configuration

Open FPP • Ducted FPP • In tunnel

Foil Definition

Generic • NACA 66 mod • Bi-Circular • Segmental • Custom

Velocities

Axial only • Axial and tangential

Wake Distribution

User entered • From wake file

Tip and Hub Corrections

Custom unloading • Hub image • Hub drag

Advanced Analyses

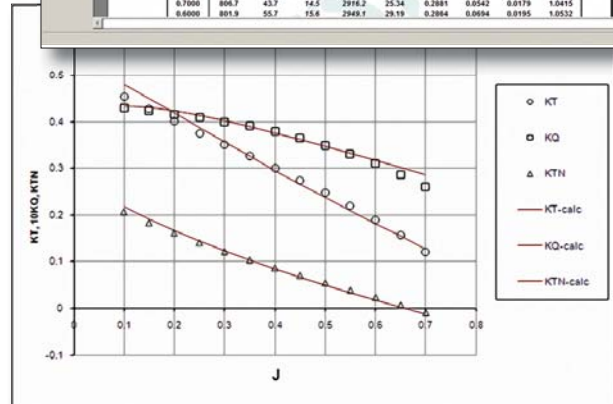
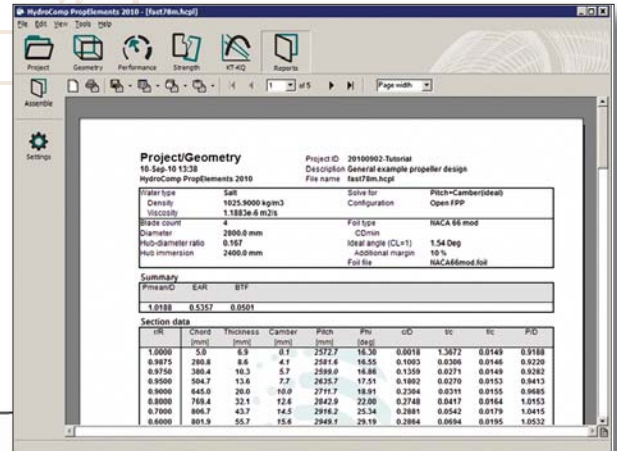
Proprietary HydroComp 3D corrections • Optimum Circulation

Materials

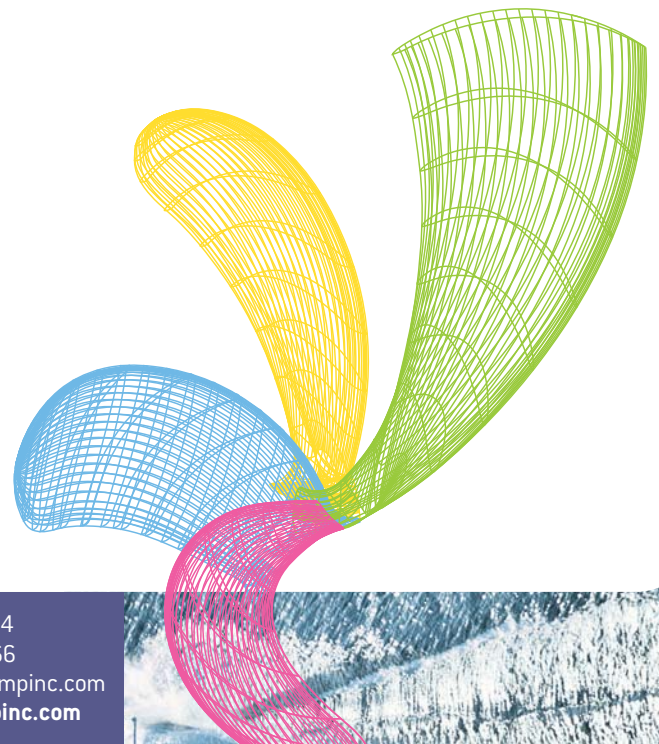
Mn bronze • NiAl bronze • St steel • Custom

KT-KQ

Constant speed • Constant RPM • Constant Rn07R



Sample PropElements "Reports" Screen and Ducted Propeller Validation Study



To order, please contact HydroComp, Inc. or this authorized representative:



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