**HydroComp, Inc.**

**July 30, 2019**

# HydroComp NavCad® 2019 Released

***New features for improved workflow and prediction fidelity***

Development in 2019 for HydroComp NavCad is focusing on increasing user efficiency and even greater improvements in prediction fidelity.

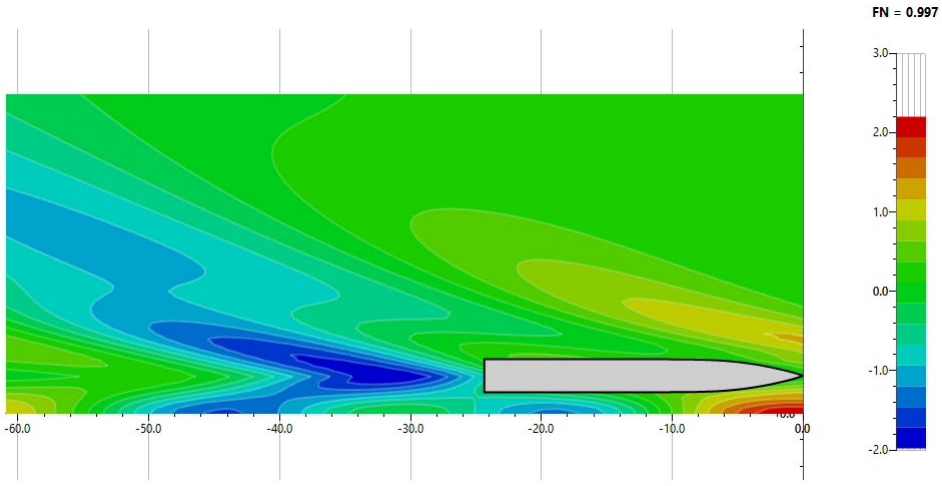
**High-performance propellers**

Two new features for high-performance propellers have been developed for NavCad 2019 – prediction of "progressive pitch" propellers and a new model for surface-piercing propellers (SPPs). A "progressive pitch" propeller has a cambered propeller face. (The name comes from the added "progressions" of pitch from leading to trailing edge. This added camber changes the thrust and torque loading characteristics of a propeller.) The library series propellers such as Gawn or B-Series, however, are flat-faced propellers so the new prediction determines the increase in KT and KQ for a propeller's "face curvature ratio" (a new metric to quantify the added camber in a propeller). This will particularly benefit those evaluating outboard and stern-drive propellers, as well as contemporary propellers for high speed craft.

The new SPP model offers NavCad users with a model for a 5-bladed cleaver-style wedge-sectioned propeller. (A 4-bladed variant is in development.) Our in-house research also allowed for the development of a new performance metric for a "minimum critical speed", below which SPP propeller performance begins to fall off. This new design criteria can provide information to ensure that the *Vessel-Propulsor-Drive* system running SPPs have the proper gear ratio for the proposed speed and power.

**Analytical Distributed Volume Method (ADVM)**

HydroComp's powerful ADVM method has undergone additional updates to expand its scope to fuller vessels (such as workboats and full form merchant vessels) and further improve its prediction accuracy. It also has a better predictor of the longitudinal contribution of a design's sectional area curve and beam distribution on wave-making resistance. This provides an even better tool for optimization of hull geometry where it is most effective and has the least demand on computational resources.

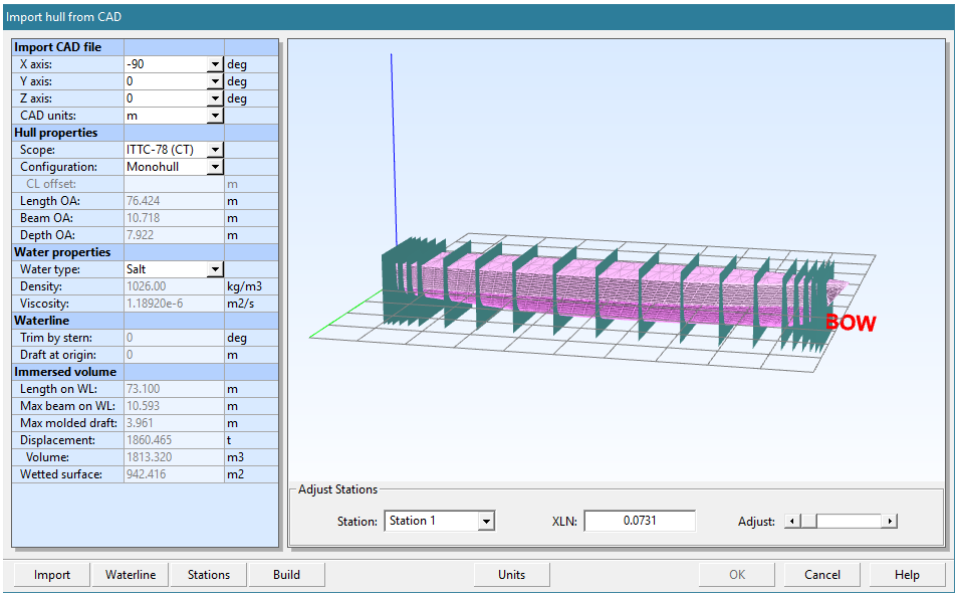


### Foil-assisted asymmetric planing catamarans

A new extensive upgrade to the planing calculations in NavCad was completed in 2018 (as documented with our success at the “Planing Hull Simulation Grand Challenge” during the ASNE Multi-Agency Craft Conference). Building upon this new update, HydroComp staff had an opportunity to extend this work for fully-asymmetric (inner wall-sided) planing catamarans. A corresponding foil-assist prediction model uses a simplified definition of foil geometry (a planform area and center of effort) with a design lift fraction and foil lift-drag ratio for an easy-to-use evaluation of the potential benefits of foil-assist.

### CAD-to-NavCad pipeline

The “hull CAD import” utility introduced in 2018 has been improved for even faster operation and better data capture. Suitable for all vessel types, the module extracts all of the hull data necessary for predictions, including the ADVM method that employs the full hull form volume distribution.




## About HydroComp

Since 1984, HydroComp has been a leader in providing hydrodynamic analysis software and services for resistance and propulsion prediction, propeller sizing and design, and forensic performance analysis. Through its unique array of software packages and services, HydroComp serves over 1200 naval architectural design firms, shipyards, yacht owners, ship operators, propeller designers, universities and militaries around the globe.

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