



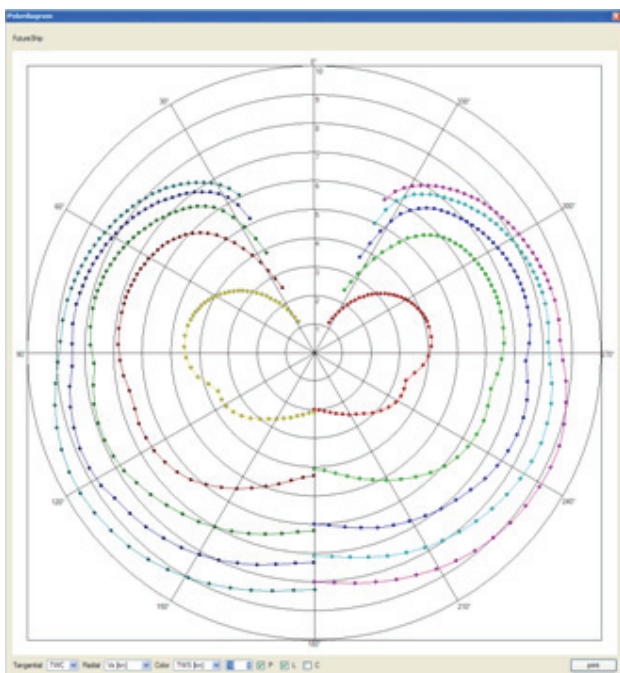
FS-Equilibrium

Photo courtesy of BMW Oracle Racing

Advanced workbench for the analysis of steady states of equilibrium and transient states of motion

FS-Equilibrium software program

FS-Equilibrium is an open modular workbench for the analysis of floating rigid body equilibrium conditions and motions. Using a flexible architecture with so called force modules a specific setup for your application can be built. The individual force components acting on the



rigid body are modeled by the force modules. The Naval architects and yacht designers can feed their CFD and EFD data to the force modules in order to simulate their vessel's performance.

In the steady state mode the equilibrium conditions of external aero- and hydrodynamic forces and moments acting on yachts, ships and floating bodies can be computed for up to 6 degrees of freedom.

In addition in the transient mode the program integrates the non linear differential equation of motion and computes the trajectory of your vessel so that maneuvers such as turns, stops, zig zag tests and real-time sailing scenarios can be simulated.

Prominent applications are hydrostatic calculations of marine systems, velocity predictions of sailing yachts and maneuvering simulations for sailing yachts, ships and other floating vehicles.

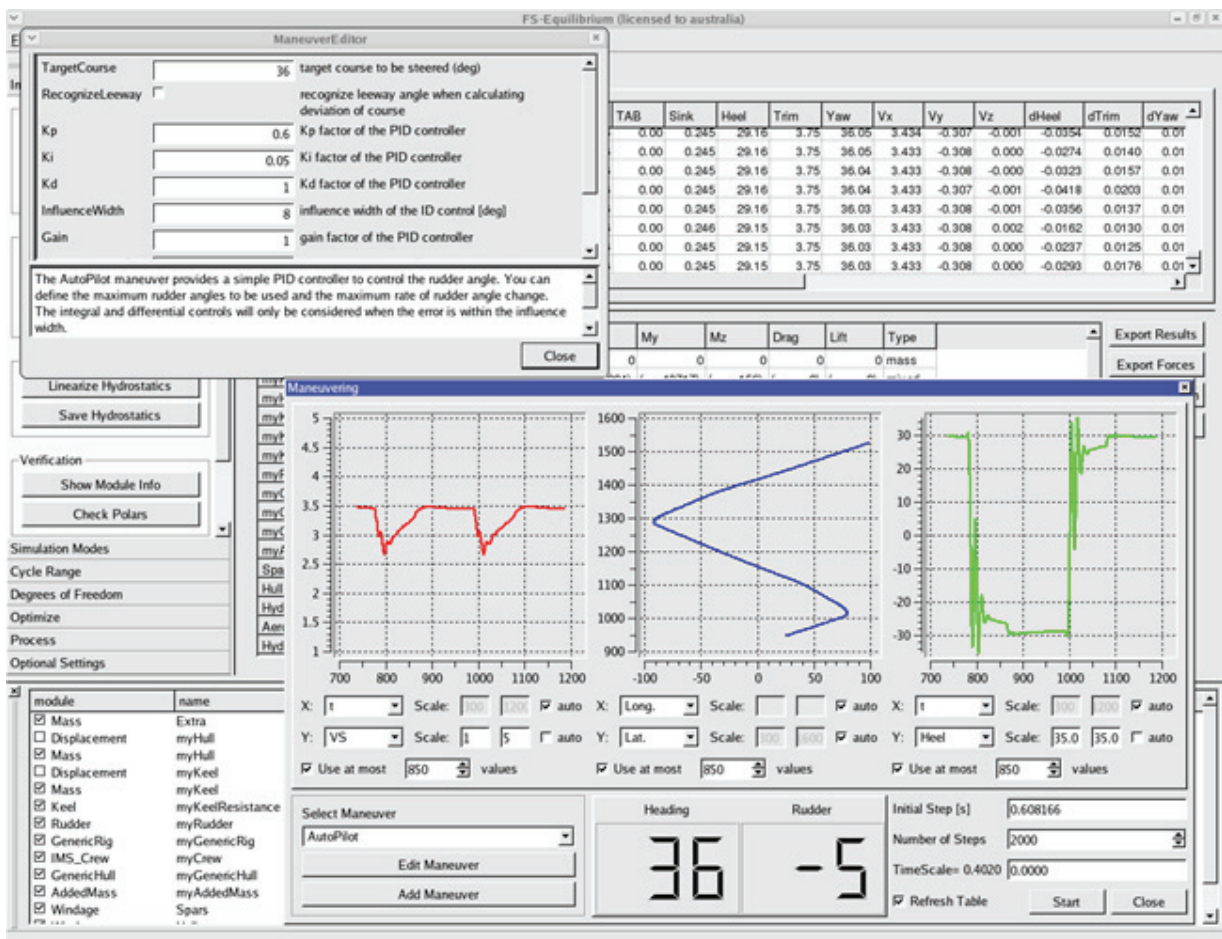
Features

- Task oriented set-up of force modules comprising external forces and moments
- Collection of standard force modules (e.g. displacement, mass, rudder, keel, rig)
- Plug-in support for user defined force modules
- Incorporation of individual force modules through an application programming interface (API) in e.g. C++, C, FORTRAN
- Flexible consideration of all relevant degrees of freedom
- Detailed output of all forces and moments
- Advanced strategies for time stepping (e.g. fifth-order Cash-Karp Runge-Kutta with user selected accuracy)

- Autopilot via PID controller
- Direct extensibility for tailor-made modules
- Availability for *Linux*® and *Windows*®

Applications

- Hydrostatics and stability calculations for marine systems
- High-end velocity prediction for sailing yachts (VPP)
- Maneuvering simulation for ships, yachts and other floating vehicles/objects



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