86 MOCRA Rating Certificates were issued for 2025, compared with 102 in 2024. The certificates were emailed to the boat owners and have been published on the MOCRA Rating website.

Following representations over several years that the simplistic MOCRA formula is not equitable, particularly when the range of boat weights is 350kg to 30,000kg, the MOCRA Racing Committee have agreed that the 2026 MOCRA Rating Rule will use the ORC Mh VPP.

MOCRA 2026 Certificates are already prepared for any boat which had a MOCRA Rating in 2022-2025.

Rating renewals and new applications can follow the same procedures in place for the last 15 years.

A levy is payable to ORC on each certificate issued and this will be covered by increasing the current MOCRA Member's £26 rating fee as follows: below 12m £35, 12-15m £50, above 15m £75.

The use of the ORC system also provides access to the Speed Guide with polar diagrams for your boat and the option of downloading the polars in Expedition or spreadsheet format for use in Navigation software for weather routing.

There is also the option for race organisers, should they wish, to use scoring systems optimised to the specific race.

Simon Forbes,

MOCRA Rating Secretary

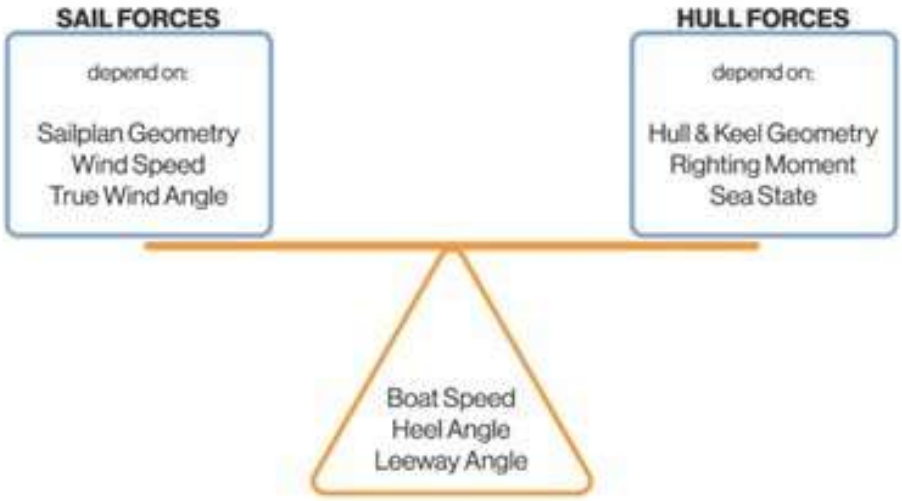
Attached: A summary of MOCRA Rating powered by ORC VPP

MOCRA Rating powered by ORC VPP

It is the objective of any rating system to give a boat rating which depends on her characteristics in order to equalize her with other boats of different size and characteristics. Characteristics that are positive for boat speed, like length of the waterline, stability, or sail area, and those that are negative, like windage, displacement and wetted surface, are the most common influences in rating systems. Establishing which of these characteristics influences boat speed is therefore the problem that has to be resolved.

To tell how fast a boat can sail in certain wind conditions ORC has developed with continuous research and update an ORC Velocity Prediction Program (VPP) as a mathematical model which calculates a boat's performance from the set of measurements and gives a rating which is then applied for race scoring. The ORC VPP is calculating a boat's theoretical speeds for various conditions: wind strength of 6, 8, 10, 12, 14, 16 and 20 knots, direction of true wind from the close-hauled to 52, 60, 75, 90, 110, 120, 135, 150 and 180 degrees. The VPP program creates a computer simulation of a boat's performance, of the boat hulls drag in hydrodynamic basins, sails in aerodynamic tunnels and measurements taken on real boats as well as computer fluid dynamics (CFD) tools.

The VPP has a two-part structure comprised of the solution algorithm and the boat model. The solution algorithm must find an equilibrium condition for each point of sailing, where it balances the driving force from the sails with the hull and aerodynamic drag, and the heeling moment from the rig with the righting moment from the hulls.



The VPP determines the steady state conditions by satisfying two equilibrium equations:

Firstly, the net force along the boat's track (its direction of motion) must be zero:

Driving Force – Drag = 0

Secondly, the aerodynamic heeling moment produced by the mast & sails must be equal and opposite to the righting moment produced by the hull and crew.

Heeling Moment – Righting Moment = 0

Boat speed, heel angle, and the sail trim parameters, reef and flat are input. The output is simply four numbers:

- the aerodynamic driving force,
- the heeling moment from the above water part of the hull and rig,
- the drag of the hulls, keels, daggerboards, and rudders and,
- the righting moment from the hulls and crew.

The solution algorithm iterates to a solution by interrogating the boat model with each new guess of the input values until a set of conditions is found that produces a match of thrust and drag and heeling moment and righting moment. The solution algorithm also seeks to find the highest speed on each point of sailing by adjusting the sail trim parameters for optimum performance.

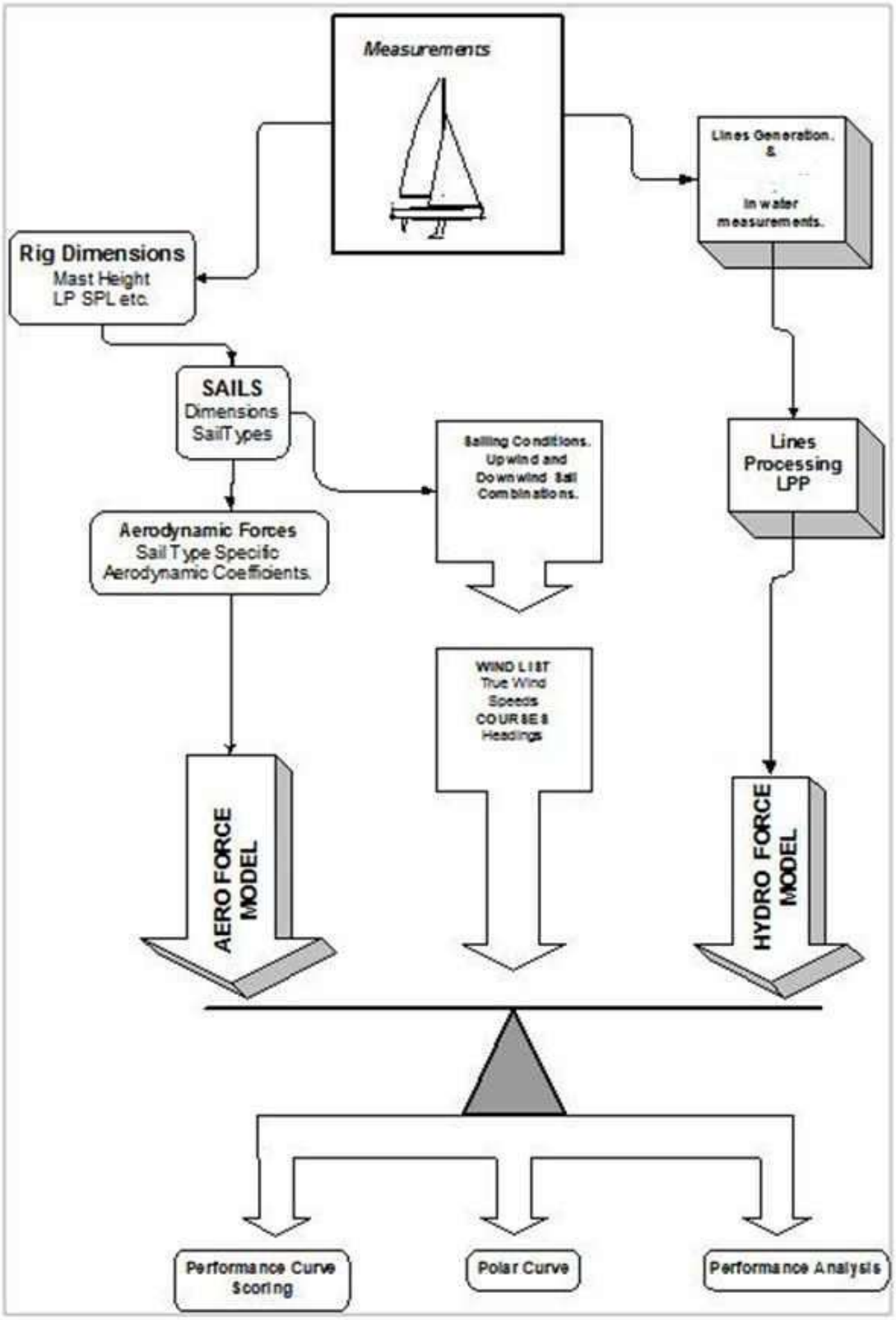
The aerodynamic model is calculating forces for each type and combination of sails. It has aerodynamic coefficients derived from various wind tunnels tests which, in combination with sail area and centre of effort height, can give the total driving force from the sails. This force is then reduced for the drag of hulls, mast and crew windage as well as rigging.

The Hydrodynamic model is from hull lines calculating the boat's resistance comprised of several elements:

- Viscous drag due to the friction of the water flowing over the surface of the hull and appendages, and the propeller, if one is fitted.
- Residuary drag due to the creation of surface waves.
- Heel drag due to the change in wetted surface and immersed hull shapes as the boat adopts an angle of heel.
- Induced drag created when the hull, keel, boards and rudder produce side force
- Raw drag due to the yachts motion in a seaway.

The Hydrodynamic model uses results of tank testing and computed fluid dynamics comparing it with real boat performance.

The second equilibrium to match is one between heeling moment and righting moment. Heeling moment is calculated from the aerodynamic heeling force and sail plan centre of effort height, taking also into account hull windage, mast windage, rigging and crew windage heeling moment.
VPP calculations take into account additional weight on board for the total crew and sails and equipment on board while racing.


Measurements
Lines Generation. &
In water measurements.
Rig Dimensions
Mast Height
LP SPL etc.
SAILS
Dimensions
SailTypes
Sailing Conditions. Upwind and Downwind Sail Combinations.
Lines Processing LPP
Aerodynamic Forces
Sail Type Specific
Aerodynamic Coefficients.
WIND LIST
True Wind Speeds
COURSES
Headings
AERO FORCE MODEL
HYDRO FORCE MODEL
Performance Curve Scoring
Polar Curve
Performance Analysis
