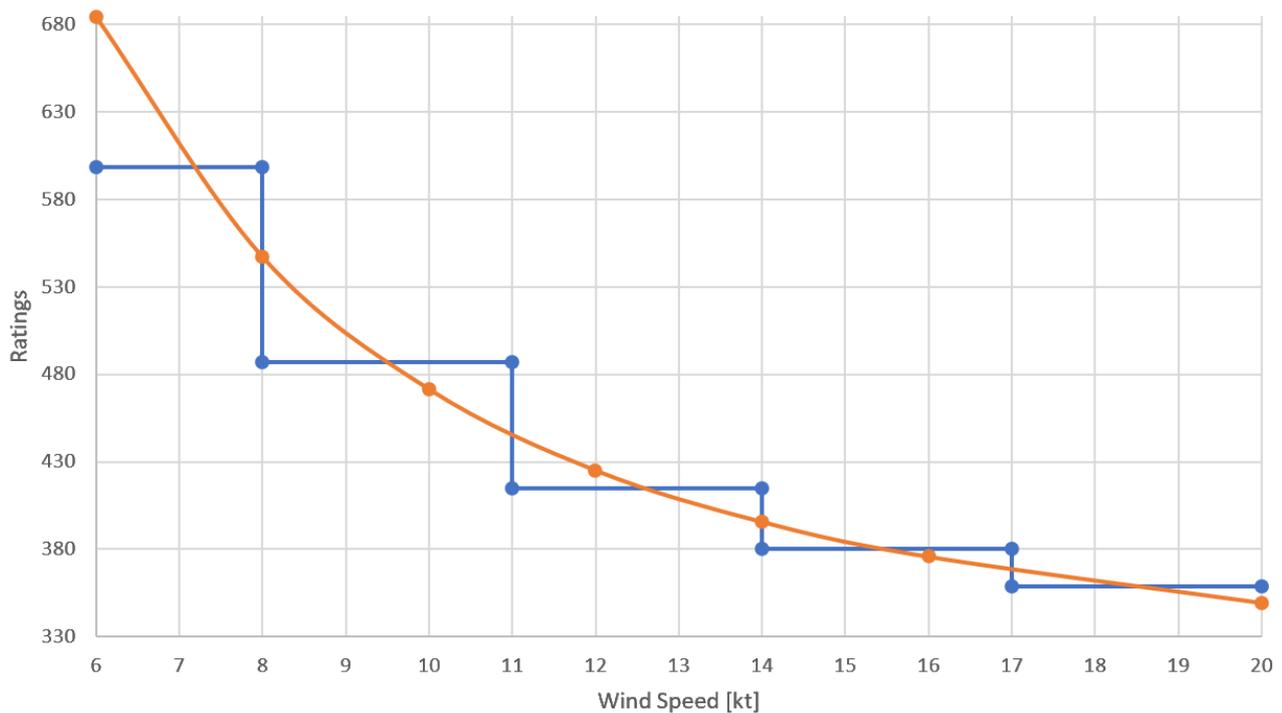


## ORCs<sub>y</sub> rating system explained

1. ORCs<sub>y</sub> rating system is based on the VPP (Velocity Prediction Program) that from complete set of measurements calculated predicted boat speeds for different wind conditions in the range of 6 – 20 knots of true wind speed for an optimum beat, and for 52, 60, 75, 90, 110, 120, 135, 150 degrees of true wind angle for an optimum run.
2. ORCs<sub>y</sub> ratings calculated for the Circular Random (All-purpose) course type that includes equal distribution of all wind directions. It may be described as sailing 360 degrees circle with wind constantly blowing from one direction
3. Using time allowances for 6, 8, 10, 12, 14, 16 and 20 kts wind for the Circular Random Course following curve (orange) may be created for each boat.



4. ORCs<sub>y</sub> is using simplified approach with 5 time allowances for 5 wind ranges (blue) as follows:

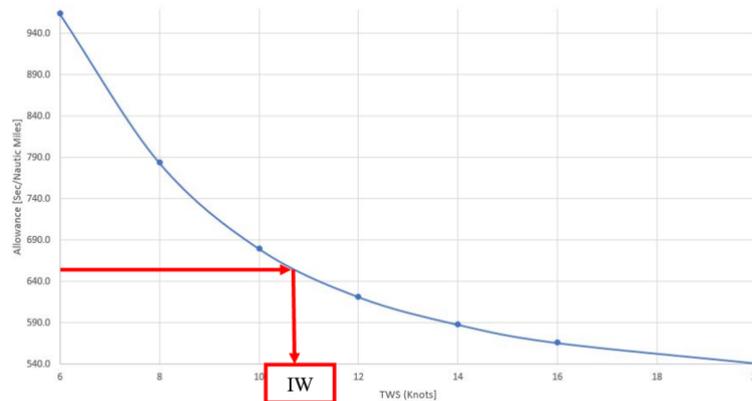
Light	TWS < 8 kts	Calculated as CR for 7.25 kts
Light - Moderate	8 kts <= TWS < 11 kts	Calculated as CR for 9.5 kts
Moderate	11 kts <= TWS < 14 kts	Calculated as CR for 12.5 kts
Moderate – Strong	14 kts <= TWS < 17 kts	Calculated as CR for 15.5 kts
Strong	TWS >= 17 kts	Calculated as CR for 18.5 kts

This brings responsibility to the Race Committee to decide prevailing wind range for the race and communicate it to boats when the leading boat is on the last leg of the course. However, this may not be an easy task as:

- wind may be oscillating through more wind ranges
- wind may still change from the time when the wind range is called with the leading boat on the last leg to the time when all other boats in the race are finishing
- if the average wind is just around the border between two wind ranges (such as 8, 11, 14 or 17 knots) deciding one or other adjacent wind range may completely change the results. (for example average wind of 10.9 kts may give different results than wind of 11 kts)

5. The solution for above mentioned problems would be:

- Use complete curve for time allowances instead of 5 wind ranges eliminating by that “Steps” and differences between two wind ranges (results with average wind of 10.9 kts will give close results to those with 11 kts)
- Using curves instead of wind ranges requires only average wind to be entered. However, it may still be difficult to determine average wind for complete race and whole fleet. Instead, a method already in use for ORC International known as PCS – Performance curve scoring is available as follows:



- The vertical axis represents the speed achieved in the race, expressed in seconds per mile. The horizontal axis represents the wind speed in knots. Elapsed time shall be divided by the distance of the course to determine the average speed in seconds per mile.
- For that average speed a point on the performance curve shall be determined by interpolation and a respective average wind for that points shall be determined as “Implied Wind”. If the “Implied Wind” point would fall outside of 6-20 knots of wind a respective 6 or 20 knots value shall be used.
- “Implied Wind” is representing the boat’s performance on that course. The faster the boat has sailed, the higher the “Implied Wind”, which is the primary index for scoring.
- The highest “Implied Wind” of the best boat in the race is then used as the wind speed for corrected times calculations. For that wind on the horizontal axis, the appropriate time allowances are determined on each boat’s curve on the vertical axis. Such a time allowance is then used as a single number Time-on-Distance coefficient

6. Advantages of the PCS scoring methods are:

- There is no responsibility on the Race Committee to determine wind strengths for the race avoiding the problems described above
- Instead, average wind speed is determined from the boat’s performance that is also representing ability of the boats to sail within boats speeds predicted by their ratings
- There are no major change in results for small variations of wind strengths
- Rating are given for Circular Random course type but may be also provided for Windward/leeward course or event constructed for any specific course configuration

7. Possible disadvantage of the PCS is that boats will not know exact handicaps between them until the finish of the race when highest Implied Wind will be calculated. However, there will be scratch sheet provide with interactive tool where each boat can see her handicaps to other boats in relation to the wind speeds. Knowing the average wind speeds during the race each boat can calculate her handicap to other boats during the race.