Les monstres – Part II

Marc van Peteghem and Vincent Lauriot-Prévost use five different examples of bow profile to demonstrate how they tailor each of their large multihull designs to meet the client's brief

It's not the size – it's the motion in the ocean

Designing racing yachts for some of the most highly respected skippers in the world is a demanding job, and innovation is the key to keeping each of them competitive, content and on the podium. To achieve the required level of aggressive, reactive, innovative, out-of-the box thinking, each VPLP design is custom-drawn to meet the needs of the skipper and the race or record programme that they want to undertake. The number of crew and the weather conditions the yacht will encounter are also key factors in the design process. But ultimately the aim is always the same: to improve on the standards already set.

If we examine the different types of bow sections from some of the best-known VPLP racing trimarans we can see how this constantly evolving, but rarely repeated approach works in practice.

We start with the base-principle that the bow of any boat is the consequence of the progression of its forward sections. So the eventual shape of the bow (as is also the case for the vessel as a whole) is determined by the sailing programme of the yacht far more than by personal preference, crew experience or even the available budget.

The broader criteria are first set according to whether the design is intended to be sailed exclusively inshore (as in the case of *BMW Oracle Racing*), exclusively offshore (as in the case of our latest maxi *Banque Populaire V*) or a combination of the two – as was the case with the Orma trimarans, which had to be versatile enough to be raced fully crewed in inshore Grand Prix and sailed efficiently offshore either solo, as in the Route du Rhum, or two-handed, as in the Transat Jacques Vabre.

Case 1

Take, for example, a section of the bow of a 2001-generation Orma 60 like *Belgacom* (Section 1, *opposite*). This type of V-section necessarily produces a positive raked bow. The more the sections are V-d, the more the bow is inclined forward, with bigger overhangs as a consequence. The original objective of this profile was to dampen pitching through waves; however, this approach has now become outmoded because increased dampening also results in increased pitch acceleration which causes the opposite effect and so is detrimental.

Case 2

Section 2 is a vertical stem that produces the blunt bow profile still most commonly seen on modern performance monohulls and catamarans; it is important to note that these boat types are not normally fitted with lifting foils so the intention is that the entire hull remains in contact with the water.

The aim of such a snub profile is to create a bow shape that will pass through waves with a fine angle of entry and increase waterline length and so lessen the pitching motion.

Generally speaking, vertical sections help to reduce drag when passing through waves by preserving this narrow angle of entry through to the upper forward sections (ie form drag does not increase dramatically with immersion when the boat is pressed). This helps to improve the hull speed capacity by increasing the waterline length and the prismatic coefficient for a given overall length. It is the type of design method that was applied to our recent 50-footer *Crêpes Whaou! II* but it is crucial to remember that this design was also not fitted with lift foils.

Case 3

Section 3 shows how we evolved from the bow shape of *Crêpes Whaou! II* to the form that is used for Franck Cammas's *Groupama 3*. But *Groupama 3* was fitted with lift foils, and she was also always intended for a circumnavigation.

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