

Brava 42 - Strength and Safety the Highest Priority

Written by Peter Brady

How do we decide what is the minimum or adequate strength for a given size of boat?

What equipment is required to make a boat safe?

Can you combine cutting edge technology with traditional values of strength and safety in the construction of a power catamaran?

These are the challenges that face designers, boat builders and ultimately, the boat buying public when comparing different boats with a view to purchase. They become even more important when fuel efficiency and range are of a high priority; light weight construction provides a statistical advantage on paper, yet becomes a serious disadvantage at sea in testing conditions if achieved by compromising strength. Ideally there would be a standard or regulation for boat building as there is with most other products. Unfortunately, the only current Australian Standard relevant to boats is the USL Code for commercial vessels which uses the Australian Standard A.S.4132 for composites as the basis for design and construction. Each State or Territory has their own safety equipment requirements, with some states such as NSW going further requiring boat builders to nominate safe passenger numbers for each vessel: this is then approved by NSW Waterways when the vessel is registered. Unfortunately, the adoption of a commercial construction standard for pleasure craft makes the vessel more expensive to build and there can be a weight penalty which may have an effect on fuel economy and performance. The upside is that it guarantees a very strong and safe boat with a higher resale value, but most importantly of all, it provides owners with a higher level of confidence when they put to sea with family and friends.

Brava Marine's management decided from the outset that they would provide their clients with greater confidence in both safety at sea and their financial investment by building to the USL Code. They were well placed in this respect as they not only had access to all the experience and data from Leopard Power Cats and Peter Brady's previous designs, they were starting with a true power cat design. This allowed them to consider the engineering and construction requirements in the design stage rather than trying to adapt an existing design to conform to a code.

Whilst some designers, particularly of multihulls, find it difficult to deal with A.S.4132 for composite boatbuilding, Peter Brady believes that many of the Standard's requirements such as solid glass in all vulnerable areas (the stem, keel, chines and gunwale) are good boatbuilding. As the Standard was originally written for monohulls, there are some areas where it does not accurately reflect the loads on multihulls and it can appear to be overly conservative. Experience has proven however that other areas such as the forward wingdeck sections should be constructed above the requirements of the Standard.

Brava Marine has invested in extensive engineering analysis and testing, reducing the weight wherever possible without sacrificing strength or durability. The Brava 42 moulds have been constructed for infusion and Brava Marine is moving quickly towards constructing the entire vessel using this technique. Laminates using Brava Marine's proprietary construction method have been tested by University of Southern Queensland Structural Testing Services and have demonstrated not only significant savings in weight but also considerable gains in strength and quality of laminates.

Stability, trim, compartment flooding and load carrying capacity are another area the public find difficult to understand when comparing boats and particularly power multihulls as all multihulls feel incredibly stable compared with monohulls. Incorrect trim and overloading can affect seaworthiness and place unpredictable loads on

structures. Working to the USL Code requires a defined analysis of stability and trim, therefore potential problems should be either avoided, or recognised and dealt with in the design stage rather than after launching. The code also defines the placement of watertight bulkheads and subdivisions to contain flooding if the vessel is damaged. This builds on the existing safety advantages of a composite power catamaran in the following ways:

1: by requiring no ballast for stability, the composite power cat is inherently buoyant

2: the power cat's stability makes it less vulnerable to wave damage compared to a monohull, which can roll portholes and deck fittings under water.

3: the power cats' lightness and buoyancy allow it to lift quickly over waves rather than drive through them causing damage to windows and deck structures.

4: individual engine rooms in separate hulls allow power and therefore pumps and safety systems to be maintained even if one hull is badly damaged.

Using their in-house design and engineering facilities, Brava Marine run hydrostatic analysis on each individual vessel's trim characteristics before construction begins. They can then make adjustments with placement of equipment if required to maintain the correct overall trim on each individual boat: this analysis has proven the Brava 42 is virtually unsinkable.

To compliment the USL Code and its required subdivisions, each Brava 42 is fitted with four 12 volt bilge pumps in individual compartments, high water alarms in each engine room and a high capacity hand pump with suction hose that can reach any compartment in the boat. The raw water inlets to the engines can even be used to increase pumping capacity in an emergency by closing the inlet valve and removing the inspection plate on the filter.

The layout of the Brava 42 provides even more safety features with mechanical reliability optimised by twin engines in their own totally separated compartments. The fuel systems are completely isolated from each other and each fuel system has dual switchable filters and water alarms, allowing a fuel filter to be isolated and cleaned even when the engine is running. The fuel tanks are separated from the engine rooms and have shut off valves outside the engine room in case of fire.

Although not required by the code in a vessel of this size, fire suppression systems can be fitted in the engine room. To minimise the chance of fire, the engine rooms are finished with fire retardant flow coat, as are the fuel tanks and the sound proofing is self extinguishing. Brava Marine is working with sound engineering specialists in an effort to create an exceptionally quiet boat, as they believe that this is an area that could be improved across the industry.

On deck, the Brava 42's grab rails are carefully placed and the handrails are a safe and realistic height. How often do you see power boats with only one rail set at a height that is too low to reach and purely for decoration?

Brava Marine believes the greater initial investment in designing and building to the USL Code will be returned to owners in the short term with confidence in their boats' design and construction and with higher resale values. Brava Marine will now be campaigning hard to have insurance companies recognise the stand they have taken on strength and safety and to reward their clients with lower premiums.

Their decision to build to the USL Code has already paid dividends in marketing the vessel to the luxury dive and corporate charter industry. Two of their first nine boats on order are destined for this industry with a third to be certified to the USL Code, allowing the owners to use the vessel for commercial work in the future. The suitability of the Brava 42 for a variety of commercial applications has been quickly recognised with strong interest from Government bodies, commercial dive and

fishing operators and the bareboat charter industry.

The Brava 42 Sports will make its public debut at the Sanctuary Cove Boat Show. Based on their forward orders before the first boat has been launched, Brava Marine is anticipating strong sales. They will also be releasing details of their next model the Brava 52. Again, the larger boat will be based on Peter Brady's proven hull platform design incorporating "Controlled Vapour Dampening" and like the Brava 42, will feature a number of different deck layouts.

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