

10.8m eco-cat

This design was initially conceived as a private commuter – to and from the Hauraki Gulf Islands independent of ferry services – and an in-town apartment. The concept called for a displacement cat that would use an absolute minimum amount of fuel and be able to make light work of rough water. Skinny hulls and a high tunnel clearance were essential. High top speed was considered less of a priority than consistent moderate speed – and 15-20kn constant operating speed is very good.

The design has developed into a versatile vessel that could be optimised for many purposes for example: small ferry, yacht club committee boat, charter fishing or diving, pleasure cruising, commercial survey, super yacht tender (with the addition of inflatable tubes) or even commercial fishing vessel. It would also be suitable for powering or testing and optimisation of small hybrid power sources such as diesel electric.

Constructed is intended to be composite or strip planked timber glassed construction. But it could be adapted for aluminium construction.

Hulls

At 10.8m the eco cat is big enough to be viable for a displacement hull form and 4.6m of beam is generous – a big platform. The near vertical stems are “right” for this type of boat – even if they don’t look like a planning monohull – as every bit of waterline length counts and increases speed potential. In keeping with the efficiency theme, the 16:1 waterline length to beam ratio is optimum. The hull could actually be termed semi displacement as it will push on past theoretical hull speed without a problem. Any tendency to squat in the stern has been counteracted by a flat area above the canoe “bustle” generates lift – as is well proven and a common stern treatment on displacement cats. Careful attention to weight distribution results in the tanks and Yanmar 4JH engines being concentrated around the centre of buoyancy. And because the engines are well forward the aft 3.8m of the hulls are available for lightweight storage and/or long range tankage.

Wing deck clearance can be an issue and a focus of this design has been to keep clearance as high as possible – approximately 800mm of clearance – to prevent slamming under the wing deck in rough conditions. Other seakeeping features include the foredeck well between the hulls up frd that is drained by grates straight out through the underside of the wing deck. This provides a firm standing platform with the advantages of instant drainage. A central “nacelle” (partial middle hull frd) and stepped hulls provide additional reserve buoyancy for the fine bows; while the forefoot (very frd part of the hull underwater) has been cut away slightly. This minimises any bow steer that can come with a deep knife

type bow, but maintains the advantages of the longest possible waterline length. The last hull shape feature is the transom steps providing excellent access onboard.

Layout

The cabin extends almost to the gunwale. Instead of side decks there is a small ledge that gives a detail crease line. Access to the foredeck is through the front of the cabin which enables bow or stern boarding. There is accommodation for a couple in a double cabin on the main level and three single berths in the hulls with the head and shower in the stb hull frd. The main double cabin has screens that can be retracted during the day when the boat is in use so that the skipper has uninterrupted visibility to port. In addition the dinette can be converted to a double berth for occasional use. There is good space for the helm station and associated electronics.

Cockpit

In the huge cockpit a variety of layouts are possible, the one shown has a deep freeze in the locker behind the main bulkhead to port and storage to stb. The seating in the cockpit aft could alternatively be higher and be locker space. Access steps in the aft end of the hull lead straight up to the cockpit without any winding treads. Davits aren't shown but the suggested arrangement for cruising is to have davits to suspend an RIB at the aft end of the cockpit. The davit may be fixed or folding.

Machinery

In the hulls the well proven and efficient Yanmar 4JH engines are located quite high up under the aft bunks with conventional shaft drive to protected propellers. There is good access, ventilation and soundproofing. Tank capacity is excellent – 600 litres diesel, 560 litres water – without using the reserve space in the aft end of the hulls. The choice of engines can range from 39hp x 2 to 125hp x 2 depending the intended operating speed.

Construction

Construction is intended to be composite foam or strip planked timber core and can be optimised to suit builder and budgetary constraints. We suggest a single planked female hull mould that will enable both hulls to be moulded from it using gelcoat and any resin type. The hulls can then be bonded to the separately moulded wing deck and nacelle using a flanged system.

A simple female timber mould is required for the cabin top and the rest of the cockpit and superstructure may be moulded or fabricated from composite panels laid up on a table.

Key dimensions

Length	10.8m
Waterline length	10.75m
Beam	4.6m
Displacement	5200kg
Draft	0.67m

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