NEW DESIGNS

Brett Murrie's

M670 DIY Series

Introducing one of the most interesting DIY craft we've seen for some time - and for once, it is not in aluminium, either. Using the latest 'saturated ply' technique, Gold Coast naval architect Brett Murrie has really challenged the notion that DIY enthusiasts seem to have to settle for second best. Not here - this is a gorgeous hull that is right 'up there' with the best of them - and streets ahead of most others. What makes this so interesting is that Murrie has combined some of the oldest, simplest DIY boatbuilding tricks in the book, together with the very latest materials, and then used computer power to cut out the bits and pieces . . . this is a craft - a technique - that is easily within the scope of the 'Saturday morning, Bunnings trained amateur' and could offer a whole new approach to sensible, economical and safe, family fishing and boating. We asked Brett to create the background . .

Some time ago, I was approached to design a sport fishing vessel capable of offshore and inshore operation alike.

The prospective client was highly intrigued by the efficiency and simplicity of the panga style longboats of the Pacific Islands and elsewhere, and had a vision of building his own boat using some of the principles of these boats.

The boat also had to be built by an inexperienced boatbuilder using a modern version of the time tested 'stitch and glue' plywood techniques.

Lastly, the boat had to be cost competitive, relatively cheap to build, without sacrificing quality and economical to run with moderate horsepower.

The result of this concept is the M670. A 22 foot (6.7m) modern styled centre console that can be built by anyone with reasonable skill of hand tools and an eye for detail.

Specifications

Length Overall (inc. outboard)	7.365 m
Length Hull	6.7 m
Beam	2.2 m
Power (Std)	* 1x140 hp (XL Shaft) 175hp Max.
Fuel Capacity	190 litres
Dry Weight **	1200 kg
Transom Deadrise	12 degrees
Deadrise at 25% LWL	37 degrees
Draft Loaded	*** 0.35 m
Top Speed as tested (140HP, 3 Adults & 100L Fuel)	33 knots
Construction	Epoxy/E–glass/Marine Plywood Core Composite

To achieve such goals, the design had to be kept simple, straight forward and honest. Simplicity of design, simplicity of construction and simplicity of layout, are principles that led to a design that has since proven to perform well above expectations.

The Design

To achieve some degree of the efficiency of the longboats, overall beam was kept to a minimum at 2.20m overall, and less over the chines. The modest 12° deadrise angle at the transom turns to almost 40° at the forefoot and 51° at entry, to aid ride comfort in a swell.

The end result is a stable, yet easily driven hull which has shown in practice to be up on the plane within a couple of boat lengths and able to put on a good turn of speed with only modest power requirements.

The design features a fully sealed, positive freeboard, self-draining deck, 190 litre underfloor aluminium fuel tank and a fully customizable enclosed transom outboard well.

Side pockets, and provision for an anchor locker forward are also allowed for.

Should the builder require it, as has been done on hull #01,the addition of a forward casting platform and additional storage is an easy modification to the standard design. Individual builders can add their own measure of customisation in way of the transom well, and the ability to fit items such as kill tanks, bait tanks and additional storage. This makes the M670 a versatile platform.

Naturally, since the design is a kit product, the final finish will be entirely up to the builder of each individual boat, thus giving a personal stamp to each project.

Designed to be built using well proven stitch and glue techniques, the hull is a Epoxy E–glass marine plywood core composite. All scantlings have been designed to comply with Australian Standard AS4132 Parts 1 & 3 for commercial vessels over 6 metres in length. This makes for an exceptionally stiff, strong and durable structure. The epoxy resins and multiaxial fabrics when combined produce a structure that is far superior in terms of water resistance and strength than the typical polyester resin/chopped strand laminates used in many well known production models.

The Build

The hull is constructed upside down on a jig consisting of a set of strong backs that provide for precise alignment of the computer cut temporary mdf jig panels and pre-glassed marine plywood structural parts.

Once the hull shell panels (also computer cut) are scarfed together, they may be fitted to the jig using temporary attachments before the gaps are filled prior to glassing the outside surfaces.

Hull laminates consist of 100% stitched fabrics and epoxy resins. Each layer of fibreglass, and there are quite a few, is strategically overlapped at both the keel and chine to provide additional wear resistance and strength.

The external surfaces are then faired before turn over, and more fibreglass laminates are added internally - thus turning the marine plywood hull shell into a fully sealed sandwich structure.

From here we see the fitting of the aluminium

underfloor fuel tank, fuel lines, foam flotation and conduits from the console to transom being run in prior to deck fitment, bonding and glassing.

The result is an incredibly durable structure capable of withstanding the most brutal treatment.

The standard console design uses the same stitch and glue style construction techniques as the hull.

Geometry is kept simple and uses subtle curves to compliment the shearline of the hull and maintain the modern styling present elsewhere in the boat.

The standard version includes a forward facing seat and locker that may be omitted if preference dictates.

Performance

The M670's goal to perform well with modest power was proven during trials held on the Gold Coast during April (2009). Running in ideal conditions with 3 adults and 100 litres of fuel on board, a top speed of 33 knots was recorded (GPS) with a standard 14" alloy propeller fitted on the Suzuki DF140.

Accelerating from a standing start revealed the hull to have no appreciable 'hole' and was easily onto the plane within two boat lengths - and up to top speed in very short order.

A series of sweeping turns, hard over figure of eights revealed control and handling to be predictable, positive and safe.

Barreling over a 1.5 metre swell and chop offshore on the Gold Coast, at a steady 22 knots, the ride was comfortable and dry, with the wide down turned chines deflecting water and spray down and outwards away from those onboard.

A couple of weeks following the Gold Coast trials, owner and builder Gary Blake wrote telling of his recent trip to Hervey Bay. His comments on the rig's performance are interesting:

"G/day Brett. We have been in Hervey Bay for the last few days celebrating my 50th Birthday with family.

"We headed around the outside of Big Woody and up the straight between it and Fraser Island to really test the rig out. We had a strong out going tide with a 20 to 25 knot northerly gusting to 30 knots. The seas ranged from 1.5 to 1.8 metres and as hard as we tried, we couldn't stuff the bow in. It came close a couple of times, but overall the boat was fairly dry considering the conditions.

"We ran the entire length of the straight between the two islands maintaining a speed of between 20 to 22 knots.

"We passed a large (name brand) aluminium centre console and an unknown large glass cabin boat as though they were standing still. They were both shut right in, with the centre console looking like it was running into a wall every time it hit the waves.

"The boat just did exactly what I asked you to design it to do. It performed brilliantly and at no time were we concerned with its handling or what we were running into.

"Several times I was able to let go of the wheel for a reasonable amount of time and we still kept on a good straight course.

"There was no hard slamming or jarring as you would expect in the conditions, just a comfortable controlled motion. On the other side of the straight we were still able to maintain good speed running with the seas just by trimming right up.

"What we put the boat through would make most shudder. I have been waiting to put the boat through its paces properly and I can't fault it. My brother was impressed no end.

"I can safely say now this is a seriously good rough water boat doing what it was built and designed to do and will live up to what ever you may want to write about its rough water capabilities.

- Gary"

I can't complain about that!

Kits & Costs

The M670 is available in kit form to make starting such a project a simple and hassle free affair.

A detailed drawing set is

included that details jig setup, hull construction and lamination, fuel tank construction (recommended to be built by an experienced tank maker), fuel tank installation, foam floatation arrangement and console construction plus more.

Material wise, the kit includes computer cut parts for the build jig (mdf) and hull shell/structure (marine ply), fiberglass fabrics and epoxy resins, fillers, coving and fairing compounds plus a few consumables to get you started.

As builder, you supply a set of sturdy strongbacks, a shed or other protected work space, power and hand tools and few additional easy to source consumables as you go.

Given a little time and effort, you will end up with a hull that is ready for painting and fitout as your heart desires.

To complete the boat, you will need to allow for paints, fuel tank and fittings, outboard motor and steering gear, batteries, electronics and electrical items, fittings and fixtures, T-top or targa, safety gear, dual axle trailer, ground tackle and foam flotation.

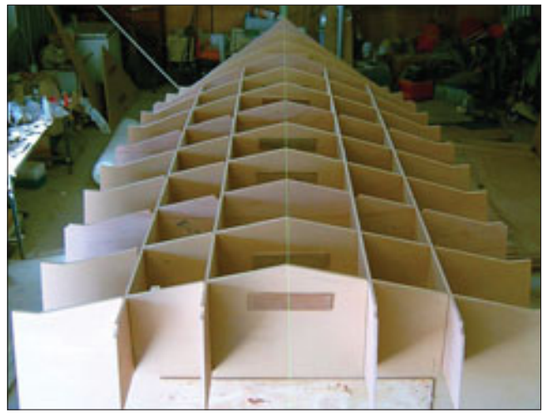
Of course, since you are allowed to use your own imagination to personalise your build to exactly as you need it, these requirements may vary a little.

For enquires regarding the M670 or its smaller sistership the M550 (also under construction) please contact Brett Murrie (naval architect & marine consultant) on

(07) 5501 5407

or by email at mboats@bigpond.com.

F&B



STOP PRESS

Just as this issue was going to press (15/7/09) we were able to confirm that the price of the building kit Brett is refering to in the text of this report - *as in everything you need to complete the basic hull* - comes in at $12,950, including GST - plus freight, ex Brisbane. This clearly makes it highly attractive for the home builder, especially as all the tricky bits are cut out for you.