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Miss Daytona build – 11

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Continuing with the decking now while waiting for the motor, I started with the two planks along each side deck edge. These are the longest and, in some respects, the hardest. The edge overhanging the deck at least can be oversize and cut back when glued in, but the inner edge needs to be shaped so it bisects the stringer under the join, remembering that this side needs to be smoothly shaped to make fitting the next one in a good fit. It is not clear from photos of the real thing, but this plank may be bent to follow the deck edge: this is not really possible here as the spring of the plank will make fitting very difficult and so I elected to cut a shaped plank from a long piece of the structural veneer trying to choose the position so that the grain *looks* along the deck edge. I did not have any cereal packets handy, so used paper to make a template that I drew round and cut out of the veneer, taking care not to distort the paper when I marked it out - that turned out to be the easy bit. The difficulty was applying enough pressure along its length to maintain close contact with the frame for enough time to allow the glue to set. I achieved this using spring clamps that had the 'throat' to reach through the deck openings for the rear, but the front section was not only the most sprung thanks to the deck camber but also there was very little for the clamps to get a grip of. In the end I used a couple of metres of bungee cord that I left over from a household job wound around the hull and stand from hatch opening to bow and wedges applied between this cord and the plank in judicious places. I got the feeling that if I disturbed it there would be a large twang and the boat would suffer, but it seemed to work and the first plank set OK. This is going to be a long and tedious job methinks. The photo shows the first plank in place, still with a ragged edge along the deck edge. Whilst the other planks will have to be shaped to fit closely, at least they are mainly straight as you can see from the line of the stringers. In hindsight, maybe I should not have been so hasty to fit the stringers as it was the small gap between them that prevented the use of clamps. The foam buoyancy is flexible enough to be pushed aside for small clamps, so I can't use that excuse. Out of curiosity, I turned the used paper template over to see if it would fit the other side, and with a minor twiddle at the bow, it seemed to, so that is a bonus.

I proceeded to add two more planks on each side and have worked out a method now to get them fitting right - each one takes around 45 minutes to cut and then glue (one a day). Note that I did not rely on symmetrical patterns for the planks that had to match others and made new ones for each plank. I found that the planks as cut needed a lot of trimming to get snug so in the end the templates were

really only rough. The photo shows the fitting of one of the planks along the deck opening (done after the motor mount) to show the fit and the clamps required. So far, other than the first pair of planks right along the deck edge, I have been able to use spring clamps exclusively thank goodness. You can see the joints quite clearly, but I suspect – hope – that when I eventually sand the whole lot smooth these might fade a little especially with light coloured wood dye. The 2+ mm thickness of the veneer helps a lot here: the deck edge still needs trimming, but the overhang provides a useful place to clamp to.

The motor arrived at this point, and it seemed sensible to do the necessary modifications to the internal arrangements. This involved working out where the 'artificial engine' has to go and how big it is so that I can arrange to mount the real one underneath it all. The result is a piece of 1.5mm plywood with pierced brass and soldered M3 thread holders all epoxied to the underside, and the keel and one frame excavated to suit. This was actually quite easy using the little circular saw blade in the my mini-drill to nibble away at it and then sandpaper. The photo shows the underneath of the ply alongside the cutout frames. I have yet to rebate out the keel a little to accommodate the brass plates. Note that the six M3 bushes in the plate correspond to the mounts for both 'motors' as yet to be made, so some conjecture was required.

This plate was glued into the hull with epoxy for strength and then I could make up a mount for the motor to suit its rather fussy end plate. This has six M3 tapped mounting holes around the endplate, with 4mm diameter cooling holes between - these had to be replicated on the mounting bracket to maintain cooling flow - and a suitable hole to clear the shaft. I also had to shorten the length of the bolts that I had as if they went in too far, they would disrupt the windings. The only suitable aluminium I had to make this from was a block 30mm x 20mm: angle would have been nice because this is what I had to turn this block into on the milling machine. They always say machining is the art of cutting away all the metal that doesn't look like the thing you want. Although the motor endplate is round, I elected to leave the bracket square at least pending the design of the 'crankcase' of the artificial engine (I'll call it just the engine, as distinct from the [electric] motor from now on!), as the square looks around the right size for one end of it. I made it quite thick, hopefully to help act as a heat sink. The other refinement was that the base needed to be filed at an angle to aim the motor for the drive shaft so that the universal joints had a little less to do. The next step on this path is to fit the motor to the mount in the boat and make the drive shaft to connect it up. I do not yet have a suitable electronic speed controller for this motor, so will not be able to test it, just rotate by hand. The necessary 'ESC' here is more complex than for *Sundowner* and its conventional DC motor: this needs to convert DC input to phased AC output (ie an inverter) and handle the potentially high current at high shaft speeds.

Further to this last point, I have a nice ‘Flysky’ six channel RC set that my family got me as a birthday gift for use on *Sundowner*. I intend to use the transmitter of course, but I may buy another receiver and the above controller just for this boat. I don’t want to keep swapping receivers from boat to boat as it is a little fiddly and tests the wiring (and my memory remembering how it wires up).

Finally, this time, I fitted the motor on its mounting and made up the drive shaft to suit – 4mm diameter in the end to suit the couplings. I also put my mini drill (the fastest rotating device I have small enough to fit in at around 3000RPM) on the shaft end where the motor goes to see how much vibration went through the hull when the whole drive was linked up. Well, it does vibrate a little thanks to a slightly out of line plastic coupling moulding, but nothing that seems likely to cause any issues. Whether it does when the rotation is 5 times as fast is of course to be confirmed…

The photo shows the installation, as well as the unfinished deck panels.