CopperCoating an Ovni 395

This note documents our experience in applying the CopperCoat treatment to an Ovni 395.

The details, quantities of materials and costs would, of course, be different for other models of Ovni. I cannot say that our approach is the best, rather that this was how we did it and these are lessons we learned. You may improve on this.

Comments on preparation

CopperCoat should last at least ten years with only touching up of any damage. Some users are still benefitting after fifteen years. Someone I know plans to overcoat their thirteen year old CopperCoat with further coats to refresh it.

For an aluminium hull, all this depends on the quality of the priming/undercoating. There is no difficulty getting CopperCoat to adhere to the undercoat and I know of no failures here. Crucial is getting the undercoat to endure on aluminium.

Alubat specify that every five years the Interprotect undercoat should be removed back to aluminium and replaced. They specify two coats of International Interprotect followed by two coats of Trilux. We are hoping our CopperCoat will last ten or more years and so preparation is absolutely crucial. We have a couple of factors in our favour:

- The hull was grit-blasted back to aluminium using a corse grit leaving a visibly pitted surface with an appearance of fine sandpaper, which will, hopefully, provide better adhesion than sanded metal
- The four coats of CopperCoat themselves provide a water-impermeable and protective barrier over the undercoat. By comparison, Trilux is quite soft, permeable and erodes and this provides little protection for the undercoat.

Anodic protection

Ahead of our decision to risk CopperCoat, I arranged some tests. I acquired from Alubat four test squares of the aluminium they use and handed them over to Aquarius Marine Coatings (AMC) who treated them with four different undercoats and then applied CopperCoat. I then deployed them on our river mooring for a year. The results were not encouraging. The CopperCoat was fine where the undercoat had survived, but in all four cases the undercoat had failed in places. Interprotect faired the best of the four. I believe this problem arose because there was no anodic protection of these test pieces.

I was disappointed to find that the undercoat on Antipole's centre plate was flaking at the end of our first season. I realised that, while Alubat fitted anodes to the lifting rudder blade, there were none on the centre plate. I fitted anodes after the first season and this eliminated the problem, although some undermining of the Interprotect had, of course, already occurred.

This demonstrates how crucial effective anodes are. I have described elsewhere the fitting of anodes to the centre plate. If your centre plate has no anodes, fit them. I used the Renault blister pattern and it was necessary to cut away some of the plate box guard plates to provide adequate clearance. You need to do this before removing the centre plate.

Before launching, I check the electrical continuity between each pair of anodes, which confirms the contact with the hull or plate bearing them.

Blocking off

We had Antipole blocked off with one metre clearance underneath to allow for removal of the centre plate. This was just sufficient. Other models may require greater clearance. Blocking off was achieved with a pile of timber baulks.

Removal of the centre plate and lifting rudder

I will not detail these procedures here but, suffice to say that these must be removed for a good job to be done.

Grit blasting

We engaged the company Symblast to remove the old coatings. Before they arrived, we

- removed the boot-top trim tape
- closed all stop cocks and plugged the skin fittings with rags
- replaced the access plates in the centre plate box that had been opened during removal of the plate to prevent grit entering that way
- marked up with coloured tape all vulnerable spots such as the paddle wheel blanking plug and the hydraulic hoses in the rudder section
- closed all hatches and covered the companionway with a dust sheet

Symblast deployed a plastic ground sheet underneath the boat and brought the centre plate onto this so it could also be blasted. (The rudder blade would also need to be included, but I had treated this the previous winter.) They then attached a skirt to contain the grit.

The blasting process was quick and they were finished and had cleared up by lunchtime.

Priming and undercoating

Symblast had proposed to apply a thick solvent-free epoxy undercoat, but we were advised by AMC to avoid this and stay with the approved five coats of Interprotect.

Because CopperCoat is itself impervious, it is important that the solvent in the Interprotect is allowed to escape before overcoating. We were advised to not apply more than one coat per day and to allow at lease four days after the last coat of Interprotect.

We had been advised to apply the first coat of Interprotect immediately after blasting and before the freshly abraded aluminium oxidised, and we did so that same afternoon. We worked with one person ‘edging’ - doing the fiddly bits by brush while the other rollered the main surfaces. The fiddly bits included using a radiator brush with a long handle to work up in the centre plate box to above the water line and the top of the guard plates, the inside of the rudder cheeks and the groins of the rudder and its skeg. The centre plate was laid flat on blocks and also rollered at the same time, but only one side at a time. The fiddly bits and the main rollering took about the same time.

The subsequent four coats were applied on successive days with one missed because of inclement weather. We were using 5 litre packs of Interprotect and, crucially, we had 3 white and 2 grey. This meant we could use alternating colours, so we could ensure we were covering the previous coat properly.

Because we were not using a whole 5 litre pack in one go, we weighed out the two parts into a mixing pot using kitchen scales at the specified ratio of 3:1. We ran short of hardener Part B and I realised that, as it is less dense than Part A, I should have made a correction when measuring by weight rather than volume. Check as you work though the packs that you are getting the right balance.

Following a tip from Symblast, we moved the waterline masking tape up by 2mm after every other coat. This helps avoid a big edge at the top of the paint,

You need to ensure that you have sufficient paint left over for later treating the parts presently inaccessible under the supports.

We returned to the boat a week later and edged with CopperCoat but the weather was deteriorating and we postponed the main CopperCoat work until the spring, which gave plenty of time for the Interprotect solvent to evaporate.

Treating the plate and rudder blade



Because the plate and rudder blade were painted one side at a time, they took more days than the hull work. We removed them to my workshop/garage to complete the work over winter at leisure. The 395 plate just fits in the back of a Ford Focus Estate car with a bit sticking out. The holes where the anode is usually attached provided an attachment point for a red flag warning of its protrusion from the rear of the car.

For the remaining Interprotect coats on the plate and rudder, small quantities were required. I measured these out using the calibrated mixing pots supplied by Symblast. 140ml Part A made up to 185ml with Part B was just sufficient to coat one side of the centre plate and one side of the lifting rudder blade. Application was by 4" mini-roller.

After completion of the Interprotect and a suitable interval for solvent evaporation, these items were then treated with CopperCoat (see below). After the CopperCoat had hardened it was lightly abraded to expose metallic copper.

I then replaced the bearing shells. I had treated the inside of the bearing holes with Interprotect but not with CopperCoat. The bearing shells were a tight fit and needed driving in with a mallet. It was important to then test the fit of the pivot axels. I found it necessary to ease the fit using a flap wheel attachment in an electric drill. If the fit were too tight, the shells might rotate inside their housing holes rather than at the pivot.

CopperCoat application

AMC have a useful video on their web site showing the process of applying CopperCoat, although this only shows the coating of an entire hull with a team of painters. There was just two of us, so we worked in two sections. Treating the centre plate and rudder blade in the workshop had provided a good opportunity to get the hang of it.

All the CopperCoat for a given section or area is to be applied in one day, overcoating when the previous layer is still tacky - hardened enough to prevent the previous coat from lifting but still tacky enough to grab the paint from the roller. Four coats are usual, but AMC recommend applying it repeatedly until the correct amount of paint has been used up, thus ensuring the right thickness. For the centre plate I applied five coats as it was a rare opportunity to access it.



The wet on tacky method works very well and the still-curing previous coat seems to catalyse the curing of the next coat. The challenge is the first coat, which has no previous coat to catalyse its cure. The trick is to apply it thinly and I thinned it with 15% isopropanol thinners. Do not expect it to cover the undercoat colour-wise (see photo). This is merely a priming coat. If you apply it too thickly, it will take a long time to reach the tacky stage and, in cooler temperatures, you might run short of time. Note that, with thinned CopperCoat, the copper dust

settles to the bottom readily and frequent stirring of the mix is necessary.

We returned to treat the hull after winter and, as recommended by AMC I abraded the Interprotect with 120 grit paper to get a keyed surface for the CopperCoat. This was very easy work as the Interprotect was not very hard even after nearly five months. Using an orbital sander was very fast and having the alternating colours in the Interprotect was most useful to warn when too much was being removed. Later I realised that hand sanding was better and dealt with irregularities in the surface contours better.

Symblast had supplied us with a roll of damp proof membrane and vinyl adhesive tape with which to make a skirt over the waterline. This is to stop drips from condensation or any rain from running down the hull and spoiling the paint. You can see this skirt in the preceding photo. It worked well.

With just two of us working, we applied the CopperCoat in two sections over two days. On the first day we treated the bottom and the non-lifting parts of the rudder. On the second day we treated the two 'panels' on both sides of the boat. Best was for one person to apply the CopperCoat while the other mixed batches, kept it stirred in the pot, topped up the roller tray as required and washed out the last mixing pot ready for the next batch. We were working with an air temperature of around 10ºC and thinned the first coat with 15% thinners. We found it beneficial to thin subsequent coats with 10% as this minimised the tendency for the subsequent coat to pull off the previous coat.

I have calculated the area of each panel/section of the hull and the weight of CopperCoat required to treat it. I have a spreadsheet which allowed me to experiment with different strategies for breaking up the work, so I knew exactly how much CopperCoat to mix for each coat of our chosen segments. I can pass these calculations on to anyone interested.

One decision we had to make was how to handle the top edge of the CopperCoat. To ensure no CopperCoat was in contact with the aluminium, we would have needed to set the masking tape so the CopperCoat stopped before the top of the Interprotect, this leaving a thin strip of Interprotect. Instead, I chose to set the edge just above the top of the Interprotect. This seals the Interprotect nicly, but does have the CopperCoat in contact with the aluminium. In part, this choice was a test to see whether there is any adverse effect in having the CopperCoat in direct contact. This 'join' is now covered in CoveLine tape and I shall watch carefully to see whether there is any adverse effect.

We left the CopperCoated hull to harden for a week before having the boat shifted on the blocks so I could access the strips that could not be done previously. The CopperCoat stood the lift well, except on the very corner of the chines where the slings had scraped as they stretched under load. I should have placed rags on these corners.

I then had to remove the Trilux and undercoat on the now-exposed strips. It was hard and dusty work holding a belt sander above my head. I did not manage to get all the undercoats off but reckon that, where I could not shift it, it was still sound enough. It took me all morning to do these small strips - about the same length of time it took Symblast for their entire visit and to do the whole hull!

Over the following days I applied Interprotect to the two strips, one coat per day, except that coats three and four were applied the same day because of an impending break in the weather. The strips were then left for a week before being CopperCoated. This second CopperCoat treatment also provided an opportunity to cover a few spots missed during the main treatment. This second treatment was left for a couple of weeks.

As recommended by AMC I then abraded the CopperCoat with 400 grit wet & dry, applied wet with slightly soapy water.

Plan B

I considered an alternative CopperCoating strategy of just treating two strips first and then having the boat shifted to rest on these while the bulk of the hull was treated. This might have been advantageous depending on weather and temperature. But, in the event, we had a period of dry weather with adequate temperatures and so did not need Plan B.

Costs and payback

Here are the costs incurred. Almost all materials were supplied by Symblast who gave me a price on the Interprotect and CopperCoat that I could not match independently.

Costs 2015

Item	Total inc VAT
Grit blasting	£912
Interprotect 25ℓ	£696
Coppercoat 12ℓ	£936
Latex gloves box of 100	£7
Roller frames, trays, stirrers and pots	£43
Masking tape	£6
Damp course and vinyl tape	£12
Brushes	£2
Cellulose thinners 3ℓ	£7
Iso-Propanol 5ℓ	£13
Additional rollers 6 x 7” mohair	£6
Total	£2,641

It should be noted that the CopperCoat itself accounted for just 35% of the project costs. The other costs would have been incurred when replacing the Interprotect anyway, which would have been needed sooner or later. So while the pay-back period for the CopperCoat would be in the region of three seasons as suggested by AMC, if the Interprotect lasts ten years, twice as long as Alubat reckon under Trilux, it works out rather differently.

With the standard treatment over ten years with two strip backs, I guess the costs would be:

Trilux	10 @ £300 per annum	£3,000
Grit blasting	2 @ £920 per 5 years	£1,840
Interprotect	2 @ £700 per 5 years	£1,400
Total		£5,240

Then, of course, there is the huge saving in effort in subsequent years, once the treatment is done, or, if you employ others to do it, bigger saving in labour costs.