

Messerschmitt

This month's free plan uses a glass fibre fuselage made on a 'lost foam' mould - something different to try!

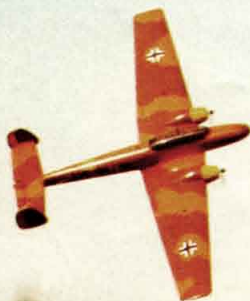
The Me-110 was one of the aircraft the Luftwaffe started the Second World War with, and it logged many successes in the first years of that war. But as allied fighters became better the Me-110 was outclassed, and changed from a daylight troop-support to night fighter.

I'd been thinking about a combined PSS and electric model for some time, but couldn't make up my mind about what type of aircraft to build. Finally, I chose the Me-110 because of its simple to build airframe, the twin fins sticking into the prop wash for better stability, and its low drag.

From the first flight on the model showed excellent handling. This Me-100 flies fast and is aerobatic, but still averages 11 minutes of flight with an eight cell 1900 mAmp battery pack. On the slope the model becomes much lighter, and becomes an easy to fly aerobatic model that can stay airborne in very weak lift.

Build

Construction is fairly simple, with foam-veneer wing, and a glassfibre fuselage, made on a lost mould. So let's



get to work, starting of with the glassfibre parts first.

Make the templates from light cardboard or thick drawing paper, old corn flake boxes do the job very well. Make the following templates twice:

- Fuselage top view (see top view drawing)
- Fuselage side view
- Engine nacelle top view

And make one engine nacelle side view of each template.

Use blue foam or white foam of 25 Kg/m³ density. Lighter foam, such as ordinary white foam is too soft to help sanding. Use pins to fix the top views on either side of a foam block, and cut with the hot wire.

Remove the top view templates, fix the side view templates into position and cut again. The fuselage is now correct in two dimensions. Add the third dimension by sanding with a 150 grit sandpaper, and when you are satisfied with the shape, smoothen with a 600 grit. Repeat the process for the engine nacelles, but try to keep the piece of foam that will be cut away for the wing. If you stick this back into place you will be able to sand the nacelles to shape without breaking the top part off. After sanding you can throw the wing-piece away.

Cover all foam parts in brown packaging-tape, and use a warm iron to smoothen, just like you would when working with solarfilm. Make sure there are no gaps through which resin might be able to get to the foam, as this would ruin the work. Apply a coat of de-moulding wax, and cover the mould with resin and two layers of glassfibre tissue 160 Gr/m², and a top layer of 80 Gr/m². Let this cure for an hour, then add a layer of a thick mixture of resin and microballons. I prefer to work with polyester resin, as this is less costly, and it hardens quicker.

After curing the edges can be trimmed of, and you can sand the microballons to a smooth surface with a



150 grit sandpaper. Make sure not to sand into the glassfibre, as this will weaken the airframe. If you can't get a smooth surface, add another, thicker layer of microballons to work with.

Smoothen with a 600 grit sandpaper and water. Cut some of the tape away and dissolve the foam with acetone. Then pull the tape and the foam residue out.

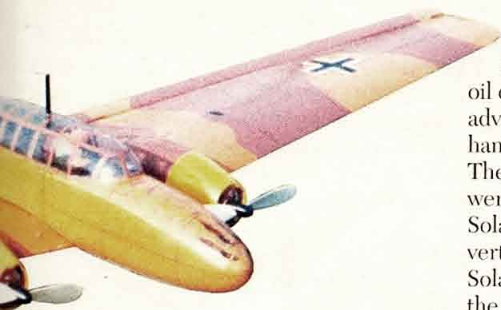
The wing is a classic foam-veneer job. Cut the core from dense foam, and cut the slot for the engines. Install the copper wires for the engines, and cover the wings with veneer or 0.5 mm balsa. Glue the balsa leading edges and wing tips into place and sand to shape. Use hard balsa for the ailerons. Join the wings and check for the correct dihedral, and reinforce the joint with a layer of glassfibre. Install the aileron torque tubes, and cover the gaps with scrap balsa, sand smooth. Glue W1 into place and drill the hole for the hardwood dowel and glue into place as well. The balsa block on top of the wing, just ahead of the servo, is to prevent the battery pack from falling down upon landing, and thus damaging the aileron servo. Glue F3 into place. Glue F1 and F2 into the fuselage.

The tail section is cut from balsa, sanded to shape and covered with solarfilm. Glue the vertical stabilisers onto the horizontal stab. Install the elevator control linkage, and hinge the elevators to the horizontal stab. Install the wing onto the fuselage, check for proper alignment and drill the hole for the nylon bolt.

Attach the pushrod to the elevator linkage, and glue the tail into place, checking for proper alignment. The canopy can be moulded on a wooden block, but is also available from me for Bfr 550 or DM 25, in cash or Eurocheque. Glue the canopy into place and drill the hole for the plastic tube.

hmitt 110

The Me 110 makes up into an attractive model



You can guide the antenna out of this tube and fix it to one of the vertical stabs.

Install the motors onto W2, you might want to make more holes for W2 for cooling. Glue the motors and W2 into the nacelles, without offset. There is some droop, pointing the engines downward, and this set if you glue W2 nicely on the front of the nacelle.

Cover the wings with solarfilm, then glue the engine nacelles onto the wing. Make sure to remove the solarfilm on the places where glue is applied. If you want to, make the engine nacelles removable, and make empty nacelles for PSS flying with a smaller battery pack. Check for proper alignment of the nacelles. Cover the ailerons and hinge them into place.

Because of the shortage of space, I

Covered with brown Solarfilm the camouflage was added to the wing top and fuselage top and side with light brown paint.



had trouble putting the aileron servo in, until I thought of the oil cooler. I

installed the micro servo deeply into the wing, so that it protruded on the underside. I placed the balsa oil cooler over the servo, and a second advantage was that I now had a nice hand hold to launch the model with. The top of the tailplanes and fuselage were covered in brown Solarfilm. Blue Solarfilm was used on the bottom. The vertical stabs were covered with brown Solarfilm. Camouflage was added onto the wing top and fuselage top and side with light brown paint. I used a piece of cloth to wipe off some of the paint on the fuselage top, to get some dark brown spots. With a 8 cell battery pack, two EOS micro servo's, a Robbe mini receiver and a power relay, the model weighs 1205 grams, the PSS version is just 650 grams.

The electric Me-110 flew well from the very first flight. There is some pitch-up when you feed in the power. During power-off glides you need to pull up 4 mm of up elevator (measures on the inboard trailing edge) and when flying at full power, feed in 3 mm down elevator. With modern transmitters this is easy, but correcting for this manually is no trouble at all, just trim for level flight at full power, as this mode is the most used during flight. After cutting the power, you will have to pull up elevator anyhow, and as the speed decays more and more up will be needed.

The model flies quite fast because of the high wing loading. This is also why

accelerated stalls will appear if you pull back too much. The only case when this could be dangerous is during the pull out of low altitude aerobatics. Pull the stick back too much and the model snaps out. In tight turns there is no problem, the model does snap out, but rolls out of the turn, so you will go to wings level and get plenty of time to react. When flying level with full power the model shows clearly when a stall is approaching. As the speed drops off the model will try to pitch the nose more and more up. If you let this continue the model will stall, and make a slow diving turn. If you want to correct to prevent the stall you will find you need to push the stick forward quite a lot. Funny thing is that this does not occur when stalling the model without power. In the glide the model will show a very docile stall, the answer is probably that, during the powered stall the propwash blows over the wing, causing the tail to stall first.

Don't let the stalls scare you! I just wanted to inform you about the funny characteristics of this model. The only thing you need to respect is a minimum of 30 ft for aerobatics, because if one day you need to pull out in emergency, you will snap the model out.

Beating up the field, making low passes and simulated attacks is pure fun. The Me-110 will make pleasant rolls, at a rate of about 150°/sec. Loops, Cuban eight's and split-S's are no problem, as the model has a lot of energy. Flight times average 11 minutes, and I only cut the engines in dives. The plastic 'Paul Gunther' props are excellent on this model. As landing is at high speed, choose a flat field to fly from, and make the round out as low as possible, pull the stick back all the way after touching the ground. This way you will never break a prop. The PSS version is a really easy model to fly, so not to much to say here. The Me-110 is a great model to look at when it's gliding past the slope. Bliss!

Powered by twin Speed 400 motors the Me 110 enjoys a livley performance.

