DIY Enigma machine

This is a report how Dumeas enhanced the Enigma machine. Dumeas can not be hold responsible from any damage resulting from using methods from this report.

I bought an Enigma-E kit and a wooden box second hand. Normally you have to assemble the Enigma-E kit yourself but the one I bought was already put together and after testing worked perfectly. I **don't** think the wooden box is normally part of the Enigma-E kit and I suspect someone made it himself.

Today a Enigma-E kit is sold at Bletchley Park (A really nice museum!):
http://www.bletchleypark.org.uk/shop/p.rhtm/130853/795875-Build_your_own_EnigmaE_Kit.html

If everything was already put together and in working order why this report? I wanted to try to get a better "Enigma" look instead of a printed circuit board. So I made a metal cover. I am not a metal worker myself so I had to go for the "let's try and see what happens" working method.

First I measured the available room when the lid is closed and made a paper template. I made the template a bit to big. This is to have the extra metal needed for the bending and it is easier to remove metal instead of adding it.
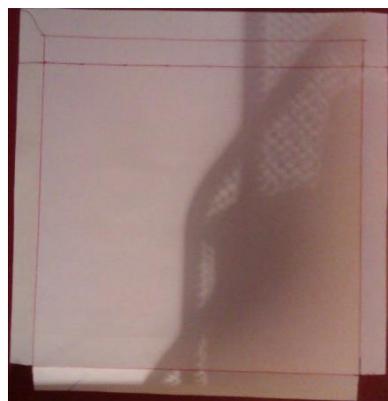
I tried soldering the corners but this was not a great success and at the end used filler material. I also made a gap along the side where the hinches are located. This is important because if the fit with the lid is too tight the lid will not open and you are stuck with a closed enigma machine. (I had this problem and it took a lot of force and a bit of luck to get the lid open again).

Inside the Enigma-E kit I found a translucent paper with the lamp board layout printed on it. I made a copy of this and used this copy as a template for drilling the holes for the lamp board.
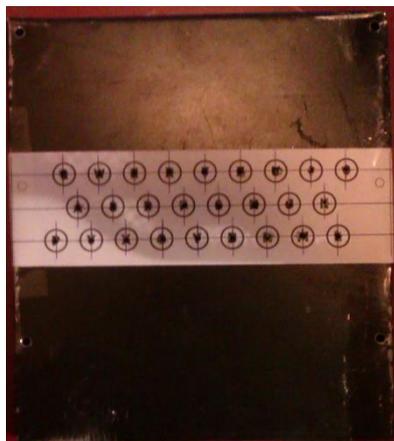
Next I had to make the button board. I made a copy of the translucent paper and used this copy as a template for the button board. To support the buttons I used hollow tubes. I drilled the holes a little to small and hammered the tubes in to the holes.

When I fitted al the tubes I glued them to the metal cover. The next step was making a big hole for the "rotor wheel" cover. For this a drew the dimensions and used a hammer and chisel to make the hole. I drilled a hole on each corner for bolts.

For making the plug board cover I used a separate piece of metal. Inside the Enigma-E kit there was no template available. I took a piece of paper and a pencil and put the paper over the plug board. When I gently pushed on the pencil the outline of the plug's appeared on the paper. After this I drilled the holes and glued the plug board cover to other cover. **In the pictures you can see I made a mistake and drilled two holes to much. I repaired this later.** For the glueing a overlapping edge is needed, this created a ugly edge on the front. To get rid of all the edges and holes I used a filler and sanded the surface till it became one piece.


After this the cover was spray painted black. The inside was also painted so the metal dust which collected inside there was captured and could not damage the PCB.

After painting I made a wheel cover. Behind the holes translucent plastic was placed. Also was the power connector placed inside this wheel cover. The battery connector and the powerswitch were connected on the topside of the PCB but that was a bit crowded so I connected them on the underside. I put the powerswitch on the on position. This way it is hinden from view and I don't need it because I have the external powersource which I use as switch. On each corner of the wheel cover a hole was drilled for the bolts.

To enhance the look of the wheel cover I made some "wheels" and glued them to the cover. It is not functional but it is for enhancing the look.
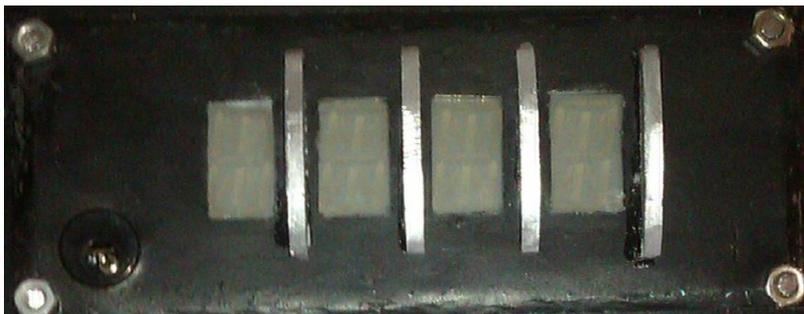
Behind the holes for the lampboard I glued a translucent plastic. After that placed the translucent paper from the Enigma-E kit with the letters on it on top of it. And as last placed a other translucent plastic on top op the paper. This way the translucent paper is pressed between the plastic and I can adjust the position by pulling at it from the side.

I made the buttons from two steel rods. The small rod fits into the tube and the big rod is placed on top of the small rod. It is important that the button can move freely because the PCB button has to pressed it back again after you pushed it and it does not have much force. The last step was placing all the stickers on the box and buttons.

In the end I had my own "Enigma machine". If you want more information or have any questions pleas contact me.