Aerial Energy Manufacturing The Circuit Board

Required materials		What I used	Where to find
	Glossy photo paper or magazines or advertising brochures	Glossy photo paper	Print shops for glossy photo paper or your mailbox for brochures
	Laser printer	HP LaserJet 1018	Attached to your PC or notebook
	Household clothes iron	Sokany ceramic coated	Ask your mom or your wife ☺
	Copper clad laminate (one sided)	FR 4 laminate 1.6 mm thick (35 um copper)	Radio Shack or any other electronic parts store
	Etching solution	Ferric chloride solution, about 1 liter / 0,26 gallons (min. 40% concentrated)	Radio Shack or any other electronic parts store
	Kitchen scrubs	Spontex “Azione Roso”	Grocery store
	Thinner (acetone)	Nail polish remover. Most solvents used in painting will do.	Grocery store
	Plastic coated wire	Plastic insulated copper wire, 2.5 mm diameter solid core	Electrical store

Manufacturing the circuit board for the Aerial Energy Generator

First, let's go through the required materials for completing the job:

- Hand drill
- Household clothes iron
- Kitchen scrubs
- Plastic coated wire
- 2 plastic trays
- Sand paper (grained 120)
- One sheet of glossy photo paper
- One piece of one side copper clad laminate (*FR4 laminate 1.6 mm thick (35um copper)*)
- Surgical gloves (one pair)
- Laser printer
- Acetone (100ml)
-Etching Solution (*Ferric chloride solution,minimum 40% concentrated, about 1 liter/ 0,26 gallons*)
- And of course, a computer

Now let's get to the manufacturing process:

- We'll print the circuit diagram (which can be downloaded from the members area) on the glossy side of the paper

- Thoroughly scrub the copper side of the laminate board with the kitchen scrub until there are no grease stains left on the board

- Gently place the diagram on the copper side of the laminate board and fix it in place with scotch tape

- Iron the board just like you see in the video for about three minutes. Be careful, as the board will be getting hot

- Leave the board to cool down for about ten minutes

- Cut the scotch tape

- Gently remove the glossy paper from the board. The printed diagram has been transferred on the board. Even if some parts are tinted in strong black after the ironing, it's ok.

- Drill two holes in the board's corners, outside the printed area, just like you see in the video.

- Fill one plastic tray with the etching solution

- Tie a piece of plastic coated wire to one of the holes drilled previously in the board

- Immerse the board in the solution filled tray

- Periodically check underneath the board to see if the circuit is ready

- After 10-15 minutes, the board should be ready

- Fill the second plastic tray with cold water

- Immerse the board in the cold water filled tray just like you see in the video

- Place the board on some paper towels

- Using acetone, gently rub the circuit board surface with a kitchen scrub or a piece of sandpaper until the laser tonner is removed and the copper linings are clearly visible

- Using a small drill bit (1, 1.5 mm) drill holes through all the rounded points on the circuit board

And congratulations! Your circuit board for the Aerial Energy Generator is ready!

Where to buy the parts:

100 uF at 50V capacitor:

Link 1:

http://www.radioshack.com/product/index.jsp?productId=12460852&numProdsPerPage=60

Link 2:

http://www.radioshack.com/product/index.jsp?productId=12460850&numProdsPerPage=60

Link 3:

http://www.radioshack.com/product/index.jsp?productId=12410951&numProdsPerPage=60

Link 4:

http://www.radioshack.com/product/index.jsp?productId=12466691&numProdsPerPage=60

Link 5:
http://www.radioshack.com/product/index.jsp?productId=12457694&numProdsPerPage=60

Link 6:
http://www.radioshack.com/product/index.jsp?productId=12427678&numProdsPerPage=60

Link 7:
http://www.radioshack.com/product/index.jsp?productId=12460853&numProdsPerPage=60

Link 8:
http://www.radioshack.com/product/index.jsp?productId=12410957&numProdsPerPage=60

Link 9:
http://www.radioshack.com/product/index.jsp?productId=12410955&numProdsPerPage=60

Link 10:
http://www.radioshack.com/product/index.jsp?productId=12466703&numProdsPerPage=60

Link 11:
http://www.radioshack.com/product/index.jsp?productId=12460846&numProdsPerPage=60

Link 12:
http://www.radioshack.com/product/index.jsp?productId=12457691&numProdsPerPage=60

Link 13:
http://www.radioshack.com/product/index.jsp?productId=12466704&numProdsPerPage=60
Link 14:
http://www.radioshack.com/product/index.jsp?productId=12457684&numProdsPerPage=60
Link 15:
http://www.radioshack.com/product/index.jsp?productId=12460848&numProdsPerPage=60

Link 16:
http://www.radioshack.com/product/index.jsp?productId=12460851&numProdsPerPage=60

200 nF (0,2 uF) at 200V capacitor:
Link 1: http://www.evselectro.com/0.2uf-200nf-250v-mylar-capacitor-3815
Link 2: http://parts.arrow.com/item/detail/panasonic/ecw-f4204hl

1N34(A) diode:
Link1: http://www.circuitspecialists.com/1n34a.html
Link 2: http://www.newark.com/microsemi/1n34a/standard-recov