Jean's Wood Zapper
as made by Jean Turner, 2010

DISCLAIMER:
This is how I made my wood zapper - shared for you to try your own, HOWEVER, you do this at your own risk, I ACCEPT NO RESPONSIBILITY WHATSOEVER for anything that happens to you, anything of yours or anything around you as a result of you using this information. Be safe - be aware you are dealing with electricity (which kills) - and if in doubt - get a qualified electrician to wire it up for you!

Inspired by Graeme Priddle's home grown pyrography machine, this version makes use of readily available parts (in the UK) in the simplest way to give a fast 'Poof' to your wood turning!

Parts List / Materials required:

150-250 Watt Varlight 12V Dimmable Transformer or something similar that takes in 240V and puts out 12V and which does not mind being dimmed. eg Old fashioned car battery charger. New sort do not work the same!
Suggested strength: 150W
model: Varilight YT150 NOT the YT150L
price: approx £20 on ebay
Dimmer switch to suit the transformer. The dimmer switch goes between the plug in the wall and the transform. Preferred dimmer: thyrister type which pulses the current rather than just resists it - less heat to dispose of and thus safer for our purposes.
model: Varilight (made to work with the varilight transformers, but any suitable will do.
price: approx £5 on ebay
Power to transformer connection:
3 pin plug and 1.5-2m standard 3 core flex source: Wickes

Transformer to handset connection:
1.5m of heat-resistant 3 core flex (such as is used for irons) - remove outer plastic coating and strip out two wires - twist lightly together and tape up with electrical tape at 6inch intervals. This wire has a coating that melts at a higher than average temperature - an added safety factor when using a strong machine - more current flowing through = more heat generated. The third wire can be saved for another handset.
Price: approx £19 for 5m from Wickes (cheaper than B&Q)
male and female 2 pin American 110V plug (available from Maplins) or other suitable unplug-able connector - this allows easy changing of handsets. As the US connectors are not sold as pairs, easy and cheap to buy more of one kind than the other. Use for example one female socket for the zapper, and male sockets on each of your handsets. If you make a faster/slower machine using the same type connectors - your handsets will work with them too.
Price approx £2.00 each

The Handset:
22mm high temperature waste pipe plastic piping - drill air through-flow holes at the bottom in the front and at the top at the back of the 'hand set' Allows airflow which helps to keep the hand piece cool during prolonged use.
Price: 20p per handset (befriend a plumber) cheapest source Wickes
Turned end caps - turn wood plugs of a heat resistant hardwood (hard maple, boxwood, oak etc) to closely fit each end of the plastic piping. Drill two holes in each the exact size of your wire core which will run through the handset, Drill additional holes in

the front to allow extra air through-flow to cool handset.
Price: a bit of effort
Maplin Terminal Block Connector strips. Small size. You need 2 (as in - cut off two as a mini-block) per handset - so buy a packet and share with someone else who wants to build the project. These are used to connect the handset wires with the nichrome burning wire.
Price £3 per packet of about 50 - buy with a friend!

Cut your plastic tube to length. turn your end caps and drill them. Drill the air holes (I used 4mm) in the handle tube - bottom front, top back. Insert two pieces of the stripped out heat-resistant 3 core flex through the end plug (machine end), through the tube, through the second end plug (front end) and screw each into a terminal connector. Push the terminal block close to the front plug and wrap wires together with electrical tape to secure. Push plug into handset, push rear plug into handset, and using electrical tape, secure the wires just outside the plug. Using two wraps electrical tape, secure the front plug to the tube, and then the terminal block to the plug, leaving the 'open' set of connector screws available for use. That's the business end done. At the plug end, split the exposed copper wires into two groups, wind each group to make a swallowtail on each piece of flex. Thread through holes in the brass inserts of the 110V plugs, each piece around the two sides of the holding screw, and wrap the ends together to form a little ring of wire around the screw. Tighten the screw and finish putting the plug together. This method holds the wire in places firmly.

The Business End:
Ni-chrome wire. Standard machines (90W) use max 0.9mm diameter ni-chrome wire. A 250W Varilight transformer will run 2.0mm thick ni-chrome wire without twitching. Obtain from Scientific Wire Company London at approx £10 per roll. One roll lasts you a lifetime, get together with a few friends and each buy a different diameter roll and share.

Baseboard:
Anything to keep the bits firm and safely installed together - eg half inch MDF, half inch plywood, etc. Source: Wickes

I also used:
Large eye hook, inserted on the end of the mdf board so I can hang the machine up when working or for storage. Opened slightly, it allows me to hang the zapper from either a wire stand or on a nail on the wall.
Source: B&Q
One wire clamp: A small piece of aluminium shaped to clamp the power wire to the base board at the point where it comes out of the dimmer switch - this prevents tension on the connection points within the dimmer switch itself. One more safety feature to prevent the power cable working loose and causing a house fire!
Source: B&Q

Even if you buy ALL the kit for just one machine - cost less than £60 for a machine that outclasses all domestic pyrography machines on the market.