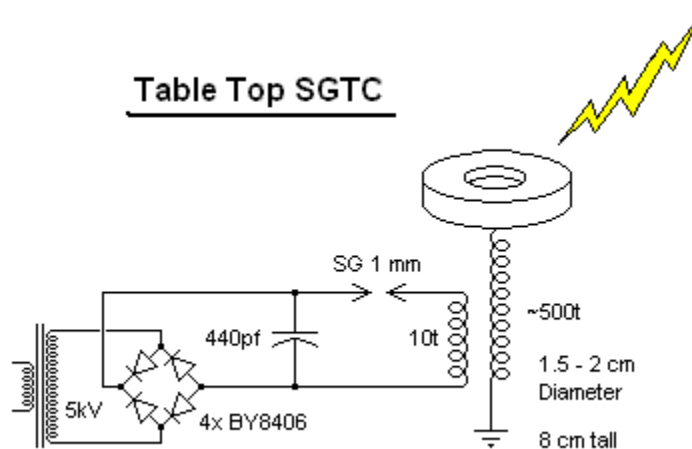


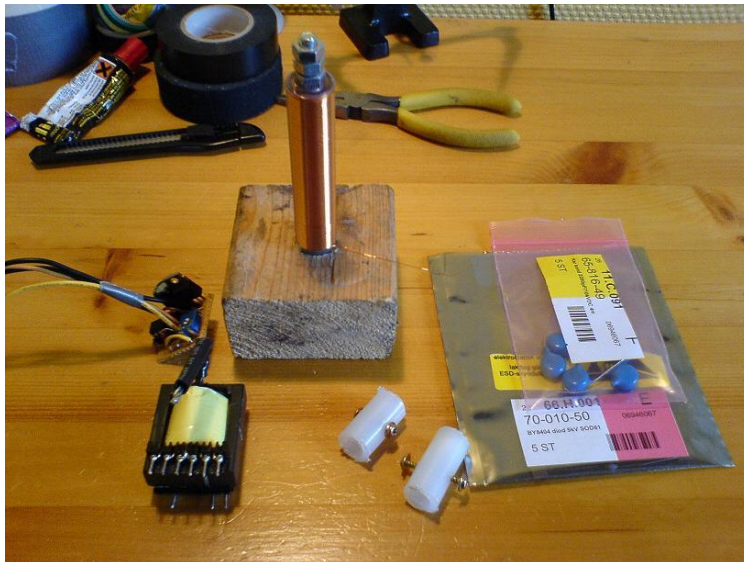
TABLE TOP TESLA COIL

This is my first Tesla Coil. I figured it was best to start small, before moving on to several 100W coils. The output from the coil isn't too bad, but not good for much else than demonstrations and displaying the concept.



This is the basic schematic of the Table Top Tesla Coil. It is a SGTC (Spark Gap Tesla Coil) and is based on Nikola Tesla's work over 100 years ago. Basically the secondary and primary are designed to have the same resonant frequency, determined by the inductor and capacitor. The primary oscillation takes place between the 440pf cap and 10 turn primary. The secondary oscillation is between the 500 turn secondary and top load, which believe it or not has capacitance to ground. A lot of math is used to get the right values, but I didn't know that until I started writing this.

When the 440pf capacitor is charged to the break-down voltage of the spark gap, it fires and the 440pf cap and 10 turn primary oscillate until the spark gap extinguishes. Since the secondary side is tuned to the same frequency the energy transfer goes very easy. The voltage induced into the secondary side is magnified by the series resonance effect, causing massive voltages to be created. Since ground is the other part of the secondary circuit it will arc out into the air in an attempt at completing the circuit. Experiment with different capacitor and primary values until the greatest output voltage is found. A good site full of Tesla Coil calculators is [Deep Fried Neon](#).



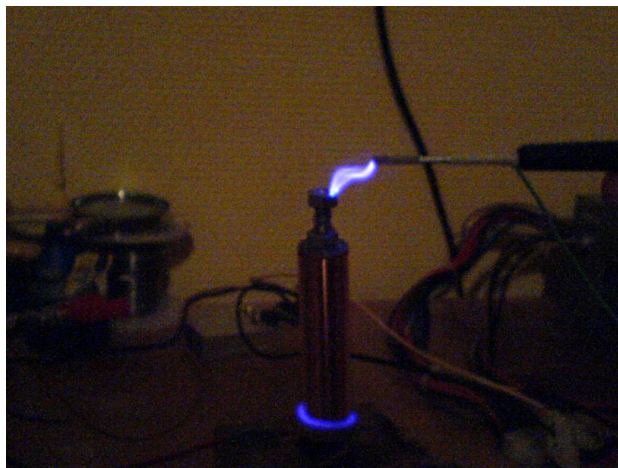
Parts used to create the Table top SGTC

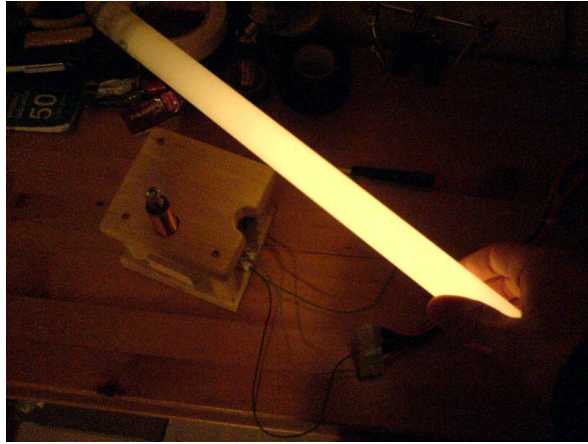
The 5kV PSU

Getting 5kV in a small package is easiest done making it yourself. Simply find a fair sized ferrite core, put a 1mm air gap between the core halves, and wind a minimum of 150 turns for the secondary. Then wind 10 turns for the primary. Remove turns until the drive MOSFET starts heating. I used my Basic Flyback Driver to drive the homemade flyback transformer. A common ATX PSU transformer was used for the 5kV xfrmr.

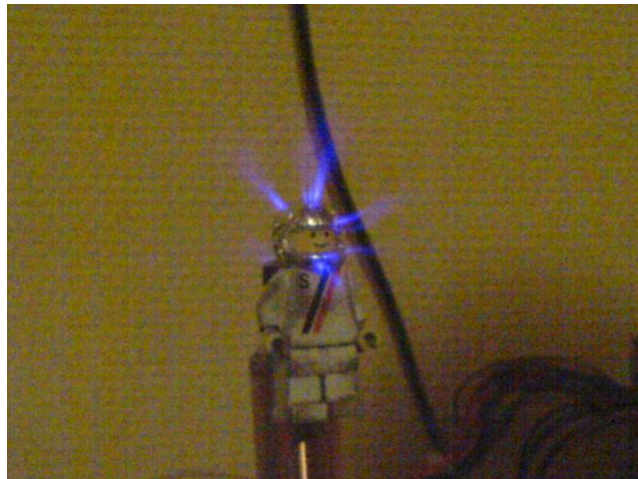
Troubleshooting

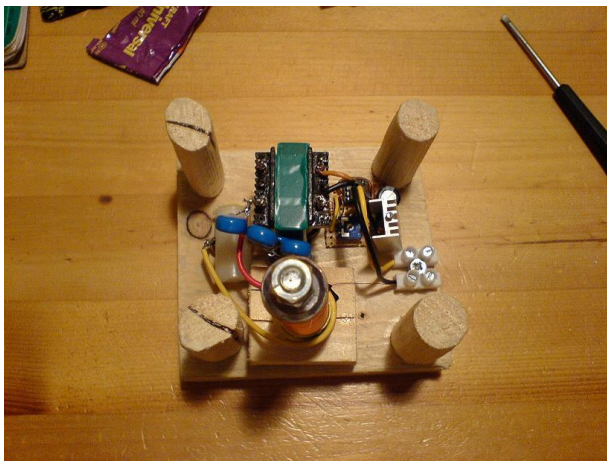
If the gap is firing bring a grounded object close to the topload and check for sparks, if so, tuning should yield better spark lengths, and possibly streamers. Play with spark gap spacing, primary turns and primary capacitance to tune the Tesla coil perfectly.





Arc to a grounded screwdriver and ungrounded fluorescent light held in my bare hand. A grounded fluorescent light shines much brighter.





Source: <http://uzzors2k.4hv.org/index.php?page=tabletopteslacoil>