

Here's a great one day project for making your very own station clock!

Just finished building this neat little digital clock. It uses Russian surplus NIXIE tubes to display the time numerically. A neon gas mixture is responsible for the familiar warm glow. The cathodes (negative electrodes) are actually wire shaped as numerals. The glowing gas around these wires is what you see as numbers. This intrigued me because it conjures up memories of vintage 1950's tube electronics of a bygone era, while at the same time marking the beginning of the digital age that we now take for granted. Warm but cool at the same time. Interestingly, these display tubes were not really used in common clocks of that time due to their relatively high cost. Nixie tubes have been replaced by LED and later LCD numerical displays. The clock can be used in 12 hour or 24 hour military standard. Handy for displaying UTC in the shack.

I've mounted the circuit board sandwiched between two heavy 3/8" clear acrylic sheets to give it a contemporary look. If you look closely, you can see a line of transistors populating the edge of the circuit board below.

Got the parts from a guy in England over Ebay (still selling at present). Was \$89 for the kit, which consisted of about 70 parts (transistors, chips, tubes, resistors, capacitors, etc) and a circuit board. Shipping was \$7, which was quite reasonable. It took me about four or five hours to solder in all of the components, including the tubes. All this soldering was inspected for correctness under a magnifying glass, as the parts are quite tiny. The clock works from almost any 9-12 volt AC wall-wort supply, but boosts voltage to 170 VDC via a switch mode power supply built onboard. Logic circuits run from a 5 volt DC regulator.

The plexiglas was my own design, and took about two hours to cut, drill out, and sand. Drilling without cracking the glass was very tedious. I used about 15 progressively larger drill bits to make the holes for the tubes, then worked with a dremmel tool to fine tune the fit. All twelve holes needed to be precisely measured, to 1/2 millimeter actually. So, about 6-7 hours labor in total. Thick plexi like this is not cheap, but these were cut from scraps left over from Ingrid's picture framing days in the city.

The clock keeps fairly good time, using the power companies 60 cycle per second AC sine wave as a time constant, however it can vary either way by a couple of seconds each day. I'm planning to build another that uses the GPS system to maintain perfect time, This clock will be interfaced with a small GPS receiver, and synchronized to the atomic clocks onboard the GPS satellites.

Cliff
N2GYI

