



Vacuum Tube Kits By diyhifisupply



## Tianjin Tube Factory Visit

[Back <---](#)



Apr 2003, in the midst of the SARS epidemic, saw me on a plane to Beijing and from there 1hr by car to Tianjin. Transportation provided by Opera/Consonance. Liu of Opera (not to be confused with Mr Liu of TJ tube factory) came along as tour guide. Mr Liu met us and we got straight down to business the usual way in China: lunch. The visit started with a meal at a famous Tianjin seafood restaurant. Fish steaks braised in Coke (the drink) is Tianjin's signature dish. The city is on the northern coast of China. People in this place are super-friendly, a trait of the Tianjin populace according to Liu.

Then on to the factory, a new facility since last summer. We were required to wear plastic booties since everything is super clean. We started in Mr Liu's office where he has a display of his creations. The factory is a private enterprise (no state involvement) and the owner, Mr. Liu is a veteran of the tube industry having worked many years for the Beijing Tube Factory. He graduated from university in 1955 in the field of vacuum tube technology and holds a number of QC patents in that field. He has previously produced CRTs for NEC. Last October he visited my office in Hong Kong and I showed him a 6N11 military tube that is known locally to be an excellent sounding equivalent to a 6922. He was quite excited to tell us that the tube was his creation for the military, the only true frame grid made in China and one of the most difficult tubes he ever put into production at BJ tube factory.

The factory is smallish with about a dozen workers, most of whom are old, highly skilled workers from the tube industry. The specialized machines you see in the pictures were made by Mr Liu. A sample of the products coming out of the factory. Up until now there has been a WE flavour to the lineup but if you look closely you can see some future products that aren't WE.

Liu and Liu. The factory is the child of Mr Liu on the left. The baby-faced Liu on the right was my tour guide and the engineer/audiophile ('feverish friend' in Chinese) behind DIYHFS kits and Opera products. The machine between them strings the filament on it's frame.





Internal parts worked on inside this 'clean box' to reduce possibility of contamination.

Preparation electrolytic bath to provide the correct chemistry for individual parts.

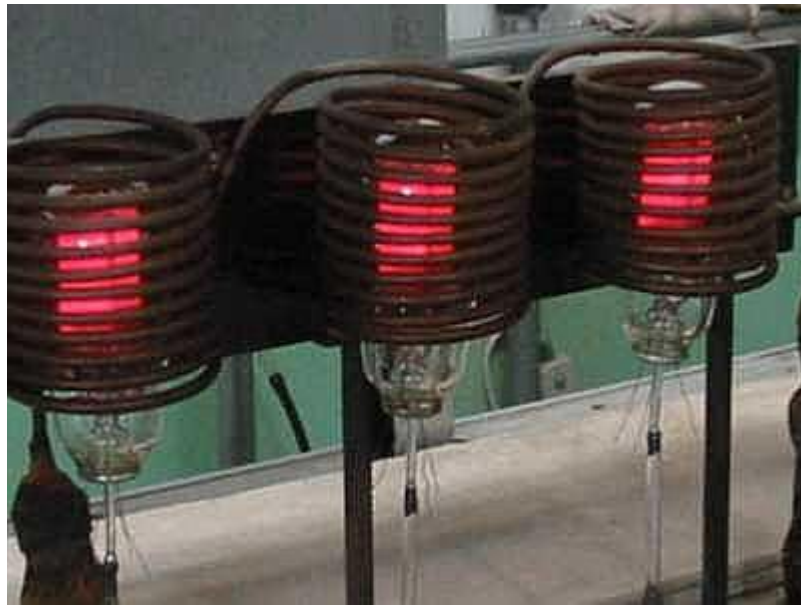




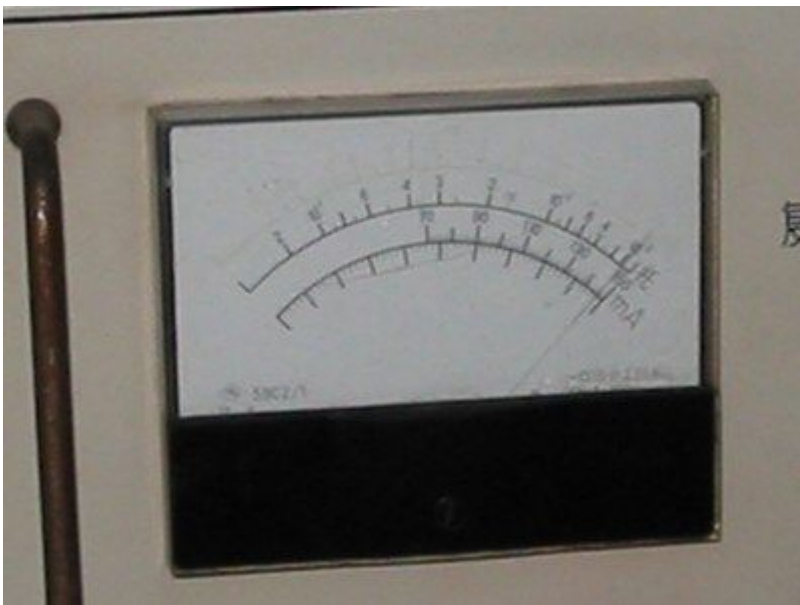
After parts are fitted, the bottom is heated and shaped for insertion of inner glass component that the leads feed from.



Then the inner glass piece is formed and fitted, another trip to the gas jets and then the fun part, flashing the getter.



followed by a trip this little Frankenstein device which completes the evacuation.



This is the plate current during the final evacuation process. No one here worries about plate-glow, only non-glow.



Between each stage of production tubes are processed in these vacuum and heating ovens to eliminate trace gases and keep the temperature in working range.



to the ultrasonic baths, but none were here at the time.

Then the 'aging' room. More plate glow. Somewhere in between the bases were attached; never saw that part.





This is Mr Liu at the control console (he built from scratch) developing a new tube (PX25). Each electrical parameter is individually controlled. Well we've been pressing for a 45. I saw the way he does it: RCA data sheet and official plate curves on the desk before him, Tektronix 570 curve tracer (thanks Ed Sawyer) showing the actual plate curve he's getting. Not quite the same yet so another prototype is made with mechanical adjustments to the internal parts and try again. Many development cycles/prototypes before the original spec is achieved. Mr Liu said that the 45 has been a tough one. Also in the works is this PX25 mesh plate (almost done), and an 845.

This is Mr Liu and me. I was sure I had more hair than him. Must be the lighting.

And that's the end. Time to get back to BJ, HK and SARS

Brian



Back <---