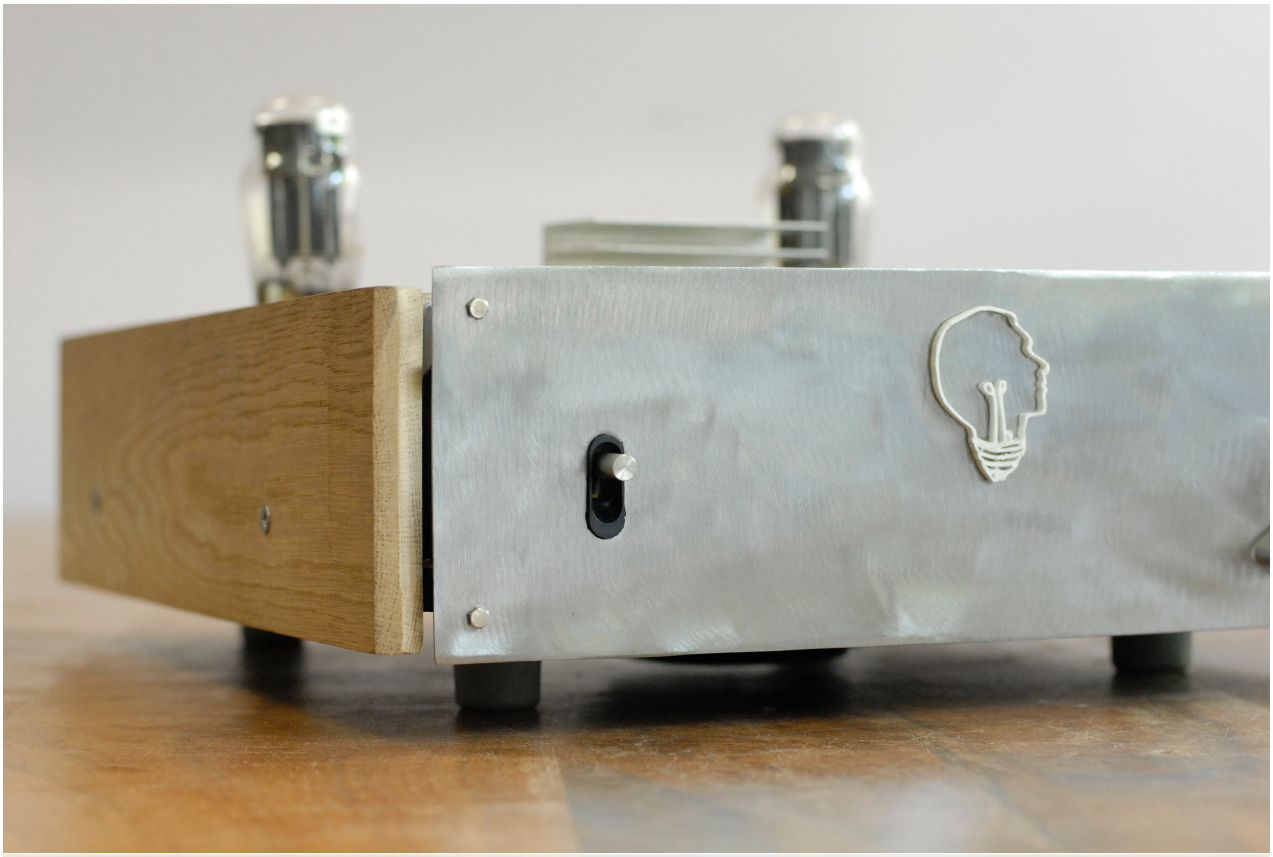
HIBU HATSUNE

Jeroen Timmer - Tube Society 23/24

HiBu HATSUNE

Before I joined Tube Society, I had never held a tube in my hands and had only heard a tube amplifier once or twice. Nevertheless the sound appealed to me and I felt an urge to learn more about this ‘old’ way of amplification. On a misty September morning I was curious, but to be honest, a bit ‘nervous’ as I drove towards Friesland from Amsterdam.

My goal for the year was to learn more about tube technology, but also about electronics in general. As a hobby, I have been repairing CD players in particular for a number of years. Not having a formal education in electronics, I little by little I taught myself to work with electronics, tools and components. I have experienced Tube Society as a very stimulating environment where work is done at a high level. At my level, I have worked where I could to grow in all kinds of areas. The support from the teachers and fellow students was very encouraging.



HiBu HATSUNE

Construction and materials

In daily life I work as an independent (product) designer. I work a lot with the reuse of different materials. That is why I chose to make my amplifier from (scrap) materials that have already had a previous life. With the amplifier I was about to build in mind, I scanned the streets and thrift stores for suitable objects and materials. Somehow all objects found their right place once I intuitively started to combine them.

Some of the items that are now part of the amplifier are:

- an old oak plank (street find) - became side panels
- two soup spoons (thrift store) - now used as transformer shielding
- a mounting bracket for a geyser (street find) - 1.5mm steel for back and front
- a base plate of a Philips CD player (stock) - base construction
- a rack and tubes from IKEA (thrift store) - base construction
- parts of a Pioneer TX-5300 (stock)
- two laptop coolers (marktplaats and thrift store) - top covers
- tube light bracket (street find) - base construction

BACK

I still had a NEUTRIK mains connector lying around. The great thing is that it has to be consciously unlocked before you can release it.

The small 2mm connections on the back are intended for the measuring probes of a multimeter. They are connected to the points before and after the cathode resistors. Each triode (two per tube) has its own inputs. This makes it easy to check what the resting voltage (50mV) and thus the resting current (50mA) is that falls across the resistors.

HA-TSU-NE

From December onwards the first ideas and images for my amplifier started to emerge. This initially resulted in sketches and 3D designs. However, the amplifier took its final form in the last weeks of the build.

During the construction, other things became important. Such as the materials I had collected, the placement of the PCBs, the routing and length of the cables and the placement of sources of interference. Form was often forced to follow function.

I have entered into a kind of 'dialogue' with the object. Many ideas that I initially wanted to apply had to be changed due to practical matters and I had to solve problems that I encountered. On the other hand some nice opportunities suddenly arose I had not thought of before!

I named my amplifier HA-TSU-NE. This is Japanese for 'First Born'. In the end it turned out to be perhaps the most complex and largest metal project I have worked on to date.

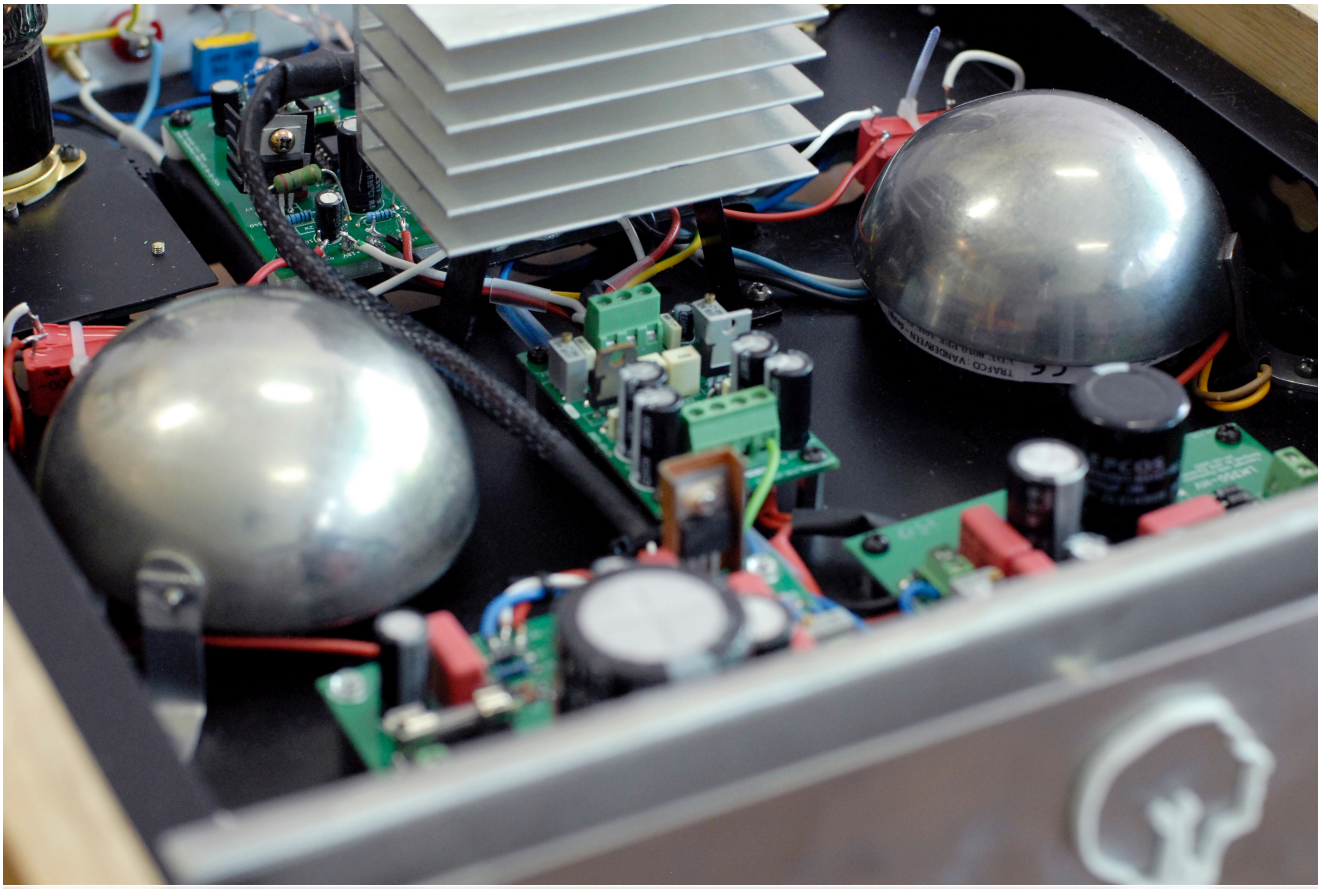
Starting point

I learn best by doing things myself, making mistakes and finding out how something can be done better next time. During the past year I have heard a large number of new concepts and terms that are now slowly starting to sink in. Having hands-on experience, I now can better place the topics covered in the lessons.

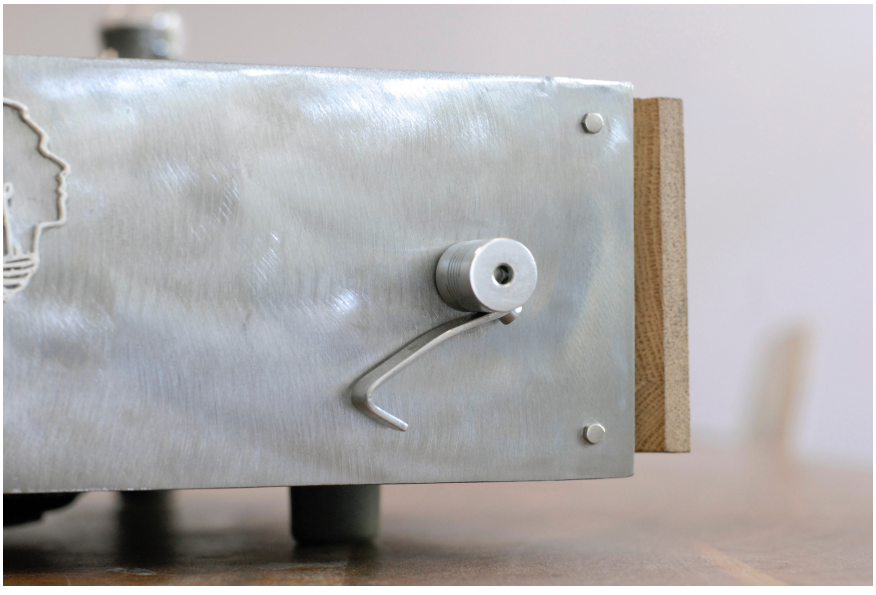
The HATSUNE is definitely not an end point for me. I see it more as a starting point for my journey into ‘tube land’. I'm looking forward to starting some relatively simpler projects and getting a deeper understanding of tubes and sound. The projects I’m thinking of are a RIAA phono pre-amp, a pre-amp and speakers.

I also see the HATSUNE as a learning object. By teaching myself more about the adjustment, understanding what the individual parts contribute to the sound and how things can be altered or improved.

SOUP SOCIETY



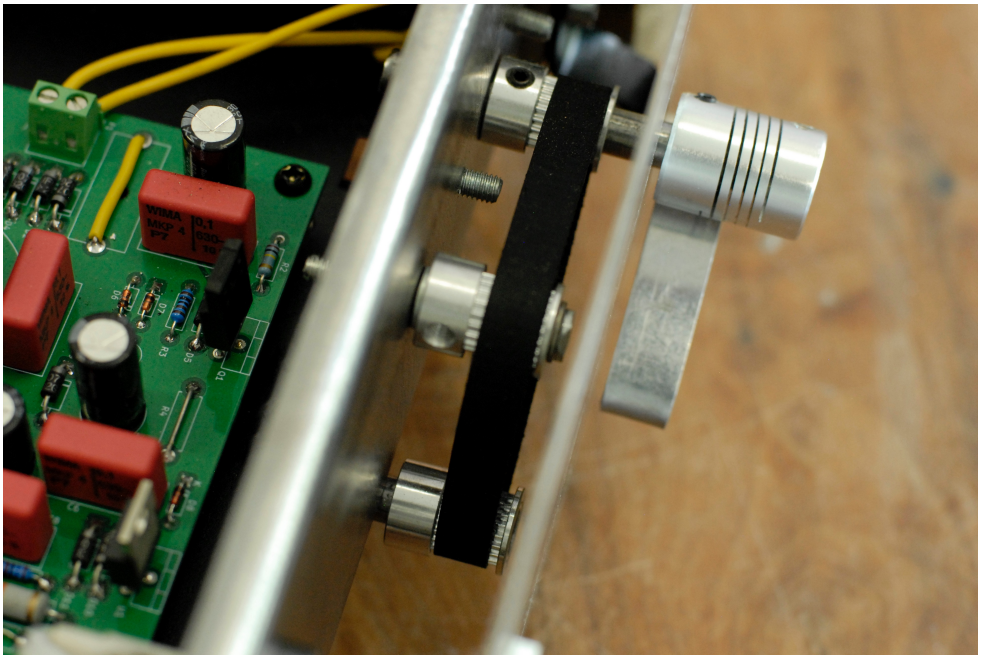
Inspired by Annemieke's soups, I chose to build two spoons in the amplifier. These stainless steel hemispheres now shield the output transformers.



There is also a piece of soup spoon attached to the volume knob to indicate the position of the knob.

FRONT

The front panel with the power switch of a Pioneer TX-5300. 3D printed logo and volume control. You can just see the power transformer hanging under the amplifier.



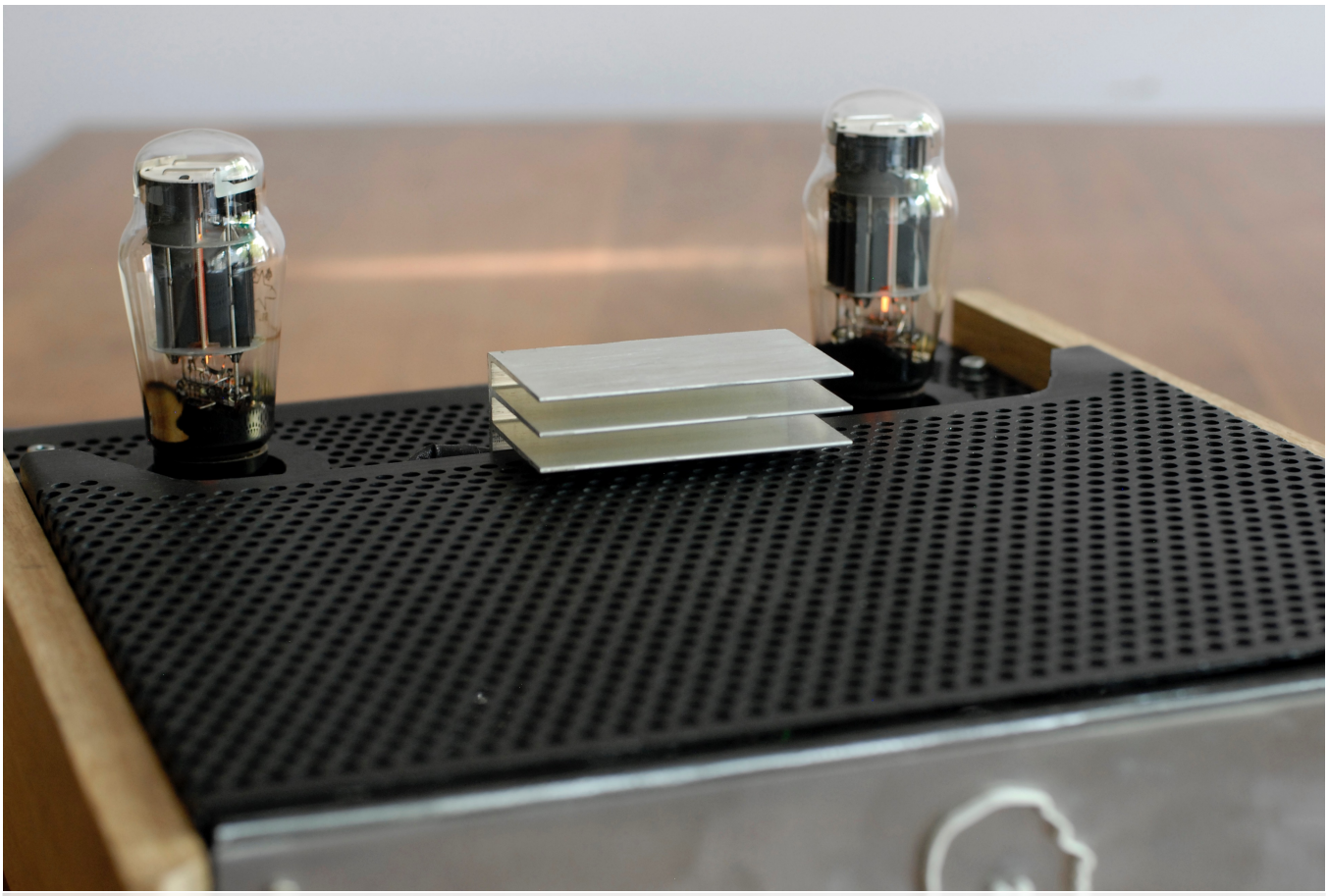
Double front panel with toothed belt transmission for the volume control. I had chosen to place the ALPS via a rod at the back of the entrances. This caused it to be too low at the front and I had to come up with something to raise the volume knob.

Power lamp on the inside.

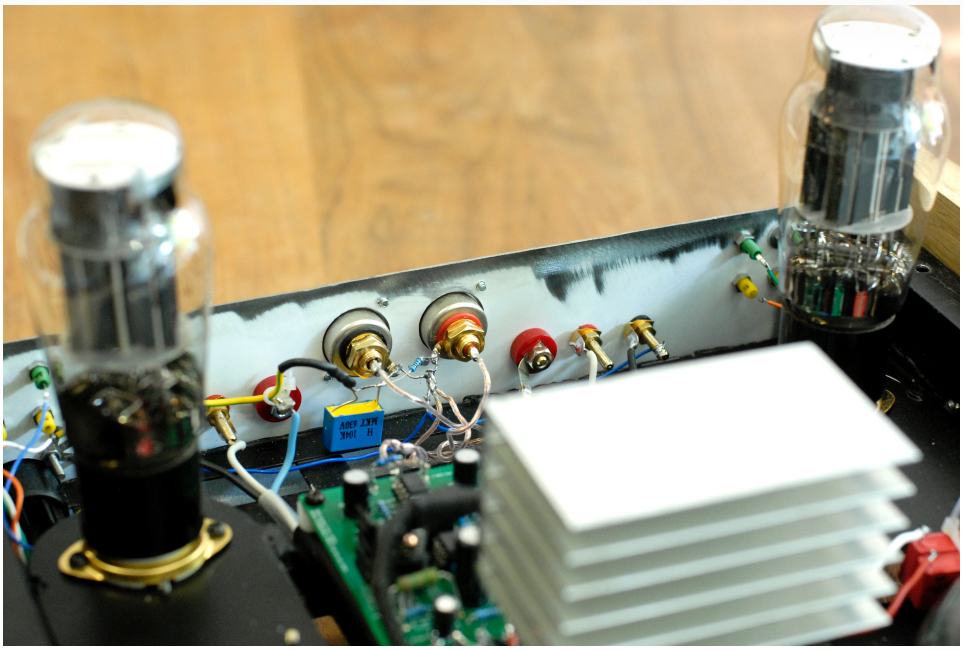
Glow in the dark

The small head on the front is my own in 3D print. When it is dark and the amplifier is on, the light from the power lamp shines through to the filaments in my head.

HEAT

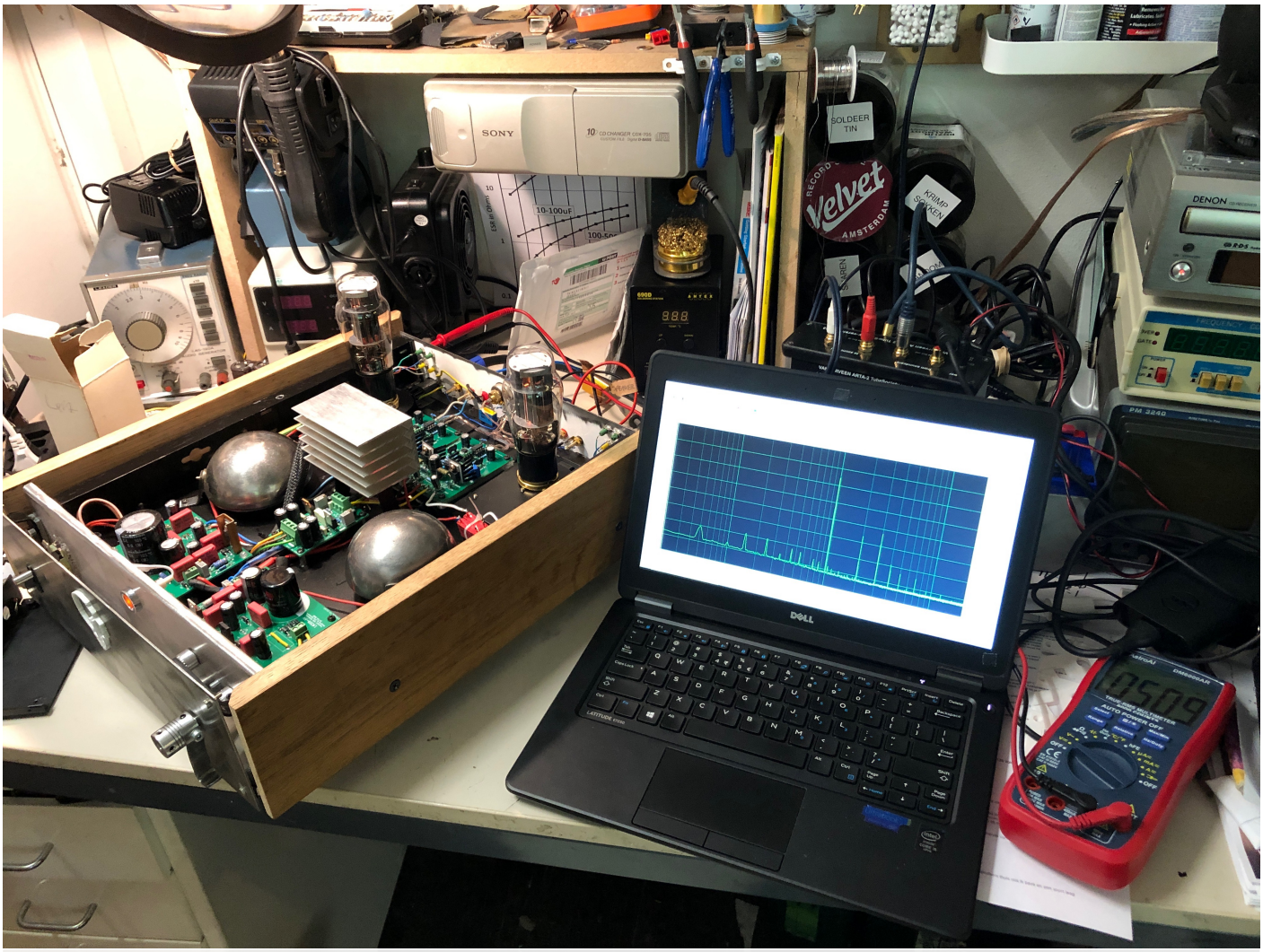


The HiBu produces quite some heat. The tubes, power resistors and mosfets on the drivers, and the mosfet of the 250V power supply contribute to this.



At this moment I have placed the heatsink for the mosfet power supply in / above the hood as a kind of air scoop. Unfortunately, this is close to the other heat sources. That's why I'm thinking of moving it to another place to distribute the heat.

TAKING MEASUREMENTS



After the hard work of building the physical amplifier I started to adjust the settings using ARTA. With the help of my notes taken during one of the classes and the assistance of Menno and experienced students I managed to do some basic measurements and adjustments. Quite exciting to see all kinds of graphs appear on the screen and get a new perspective on the way the amplifier performs.

At the moment I have a basic understanding of what I'm doing when it comes to interpreting the measurements. I succeed bringing down the 80Hz and 2kHz harmonics and producing analytical measurements. Nevertheless I think it's important to keep on trying and learning to check how changing parameters affect the overall sound.

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MAKING OF