Subject: Re: Why SE in SET amps?
Posted by Pano on Sun, 23 May 2010 22:54:00 GMT
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OK, I jump in and embarrass myself in my 1st post here.

I was lucky enough to be introduced to the DHT & SET "cult" in the mid 80's by none other than Mr. Jean Hiraga himself. I was as surprised as anyone at the sound of these little amps. Quite a learning experience hanging around with Hiraga and crew.

So here is what I know about "Why Triodes, why single ended, why direct heated?" Mostly it comes down to harmonic distortion and the structure of that distortion. It's the structure that is so important. A good SET amp does not give dominant even order harmonics, it give a very regular fall off of all harmonics, odd and even. This is very important.

Back in the 30's Wegel and Lane established that a regular fall-off of harmonics is the audible equivalent of no harmonics. Each successive harmonic is masked by the one above it, so it is not heard. So up to several % of THD will sound like a pure tone if the harmonic structure is right. This work was continued in the 70's by Matti Otala and others. I'll elaborate on that if anyone is interested.

The great thing about direct heated triodes in a singled ended configuration is that they can come very close to approaching the "ideal" harmonic structure. No other device can, not even other tubes. And they can do this with little change in the harmonic structure a different frequencies and power levels. Again, something no other device can do.

But what about amps with 0.0001% THD? Shouldn't they be better? By that number, they should be. But that does not tell us what the harmonic structure is. And the ear is very good at hearing those harmonics, even if they are tiny. Also, those amazing numbers are usually taken only at 1Khz and a fixed level. That is far form the whole story. The harmonic structure determines the sound of the amp.

Short end of the story. Harmonic structure relates best to what and how we hear. THD does not. It's more complicated than that, but that gets us started.